

# UNIVERSITY OF HAWAII AT MĀNOA

Social Science Research Institute

## Telecommunications and Information Policy Group

- Pan-Pacific Education and Communication Experiments by Satellite (PEACESAT)
- Pacific Partners Network (PPN) ■ State of Hawaii Telehealth Access Network (STAN) ■ VistA Institute
- Graduate Certificate Program in Telecommunications and Information Resource Management (TIRM)

May 7, 2007

Federal Communication Commission  
9300 East Hampton Drive  
Capital Heights  
MD, 20743

**Subject: WC Docket No. 02-60 – Pacific Broadband Telehealth Demonstration Project**

Dear FCC Commissioners:

On behalf of the healthcare provider organizations, clinicians, and communities in Hawaii and the Pacific islands region, we would like to thank the Federal Communications Commission (FCC) for re-examining the rural health care program and initiating a pilot program to improve the delivery of healthcare services, especially to rural, remote, and underserved populations, through use of broadband telehealth technologies. In response, and on behalf of the consortium applicants, we are pleased to transmit a proposal for a Pacific Broadband Telehealth Demonstration Project in accordance with pilot program rules of the FCC.

Our proposal will interconnect health care organizations throughout the State of Hawaii and the Pacific Islands region to a broadband telehealth network that will enable clinicians and support staff to improve the delivery of healthcare services to rural, remote, and underserved populations. The project will interconnect urban and rural healthcare providers to a ubiquitous and shared transport network. The broadband interconnectivity is especially important because the people of Hawaii and the Pacific islands live in island communities that are separated by distances. Even when the distances are small, air travel to the islands involves considerable time and expense, and serve as a barrier for health care for those living in the rural communities. The network will facilitate many telehealth, telemedicine, clinical, and health related education and training services, and expand the network of service providers through the Internet2.

When the FCC announced the pilot program, considerable discussion was spurred among health care providers in Hawaii and the Pacific Island region. Additionally, the information and communication service organizations of the University of Hawaii and Hawaii State Government were engaged to help determine the ways in which these existing networks can be optimized to lessen costs, improve connectivity, and increase sustainability through interconnection agreements.

The results are represented in our proposal that: (1) interconnects federal, state, local, and community healthcare providers in Hawaii and the Pacific Islands region; (2) enables the full

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range of telehealth and telemedicine services to be provided; (3) expands the type of telehealth applications that may be offered; and, (4) establishes a foundation for secure network cross-connections that will also help to further the national objective of interoperable electronic health record (EHR) systems. The proposed broadband telehealth network will interconnect both urban and rural HCPs to a state, regional, and national network backbone that enables the shared, dynamic delivery of healthcare services. The inclusion of "urban" providers is important in Hawaii where there is a concentration of healthcare specialists and where the UH School of Medicine and School of Nursing are located. The proposed network will use the existing network resources of the State and University of Hawaii to the maximum extent possible and provide the resources needed to plan for the ongoing sustainability of the network. This is essential since it takes time and resources to fully demonstrate and realize the value of shared network resources and to plan, design, develop the sustainability models.

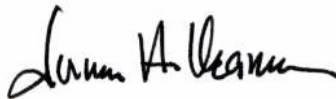
Our proposal includes a plan for strategically aggregating network usage among health care providers within the region in the most efficient and cost effective means. The budget plan includes initial design studies, transmission facility costs and advanced telecommunications and information services and Internet2 connection fees. The network partners commit to seeking the required matching funds. As the project budget reflects the technical needs for establishing a technologically feasible and economically reasonable regional advanced telehealth network, we request the reconsideration of any program rules that would prohibit the funding and implementation of our project as presented.

The process for establishing the Pacific Broadband Telehealth Demonstration Project has already resulted in improved collaboration and sharing of information between key stakeholders in Hawaii and the Pacific island region. We look forward to the opportunity to continue the momentum and implement our plan.

The PBTDP is a useful pilot project from which many lessons may be learned. This will help to inform the FCC on what may be needed in the future to ensure that the Rural Health Care Program best meet the needs of health care in the United States.

Thank you for your consideration of our application.

On Behalf of Consortium Applicants,



Norman H. Okamura, Ph.D.



Christina Higa

# FCC Pacific Broadband Telehealth Demonstration Project (PBTDP): A Consortium Application for Interconnecting and Leveraging Existing Networks, Expanding Broadband Applications, and Increasing Healthcare Provider Participation

## I. Background and Needs

This Pacific Broadband Telehealth Demonstration Project (PBTDP) seeks to interconnect healthcare providers in Hawaii and the Pacific region for telehealth and telemedicine applications. This two-year pilot project aims to improve healthcare delivery in Hawaii and the Pacific region through the development and support of broadband network connectivity among healthcare providers and to demonstrate the value of broadband clinical telehealth and telemedicine applications; continuing medical, nursing, and health education; and electronic health information records system support.

The application is especially important since the populations of Hawaii and the Pacific Island region are spread over 11 separate islands. In addition healthcare services in areas outside of Honolulu are often limited. Figure 1, below, shows a representation of the island setting in which healthcare is provided.

**Figure 1 – The Uniqueness and Challenges of the Pacific Island Healthcare Delivery**

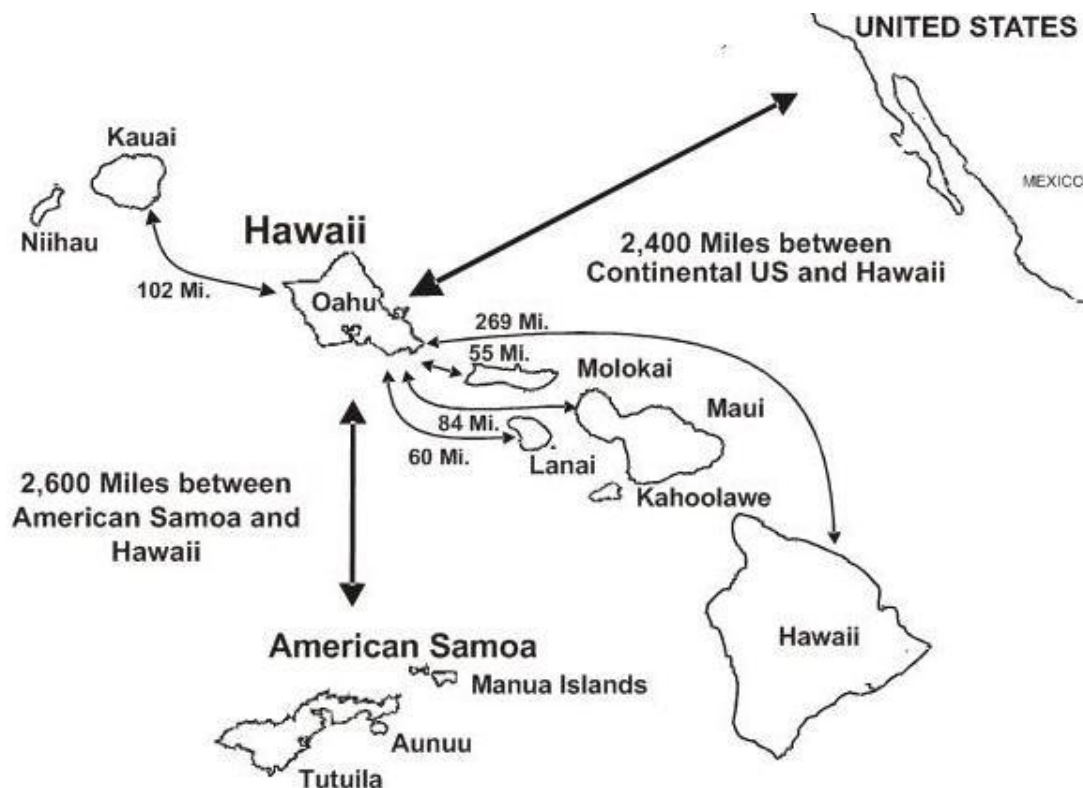
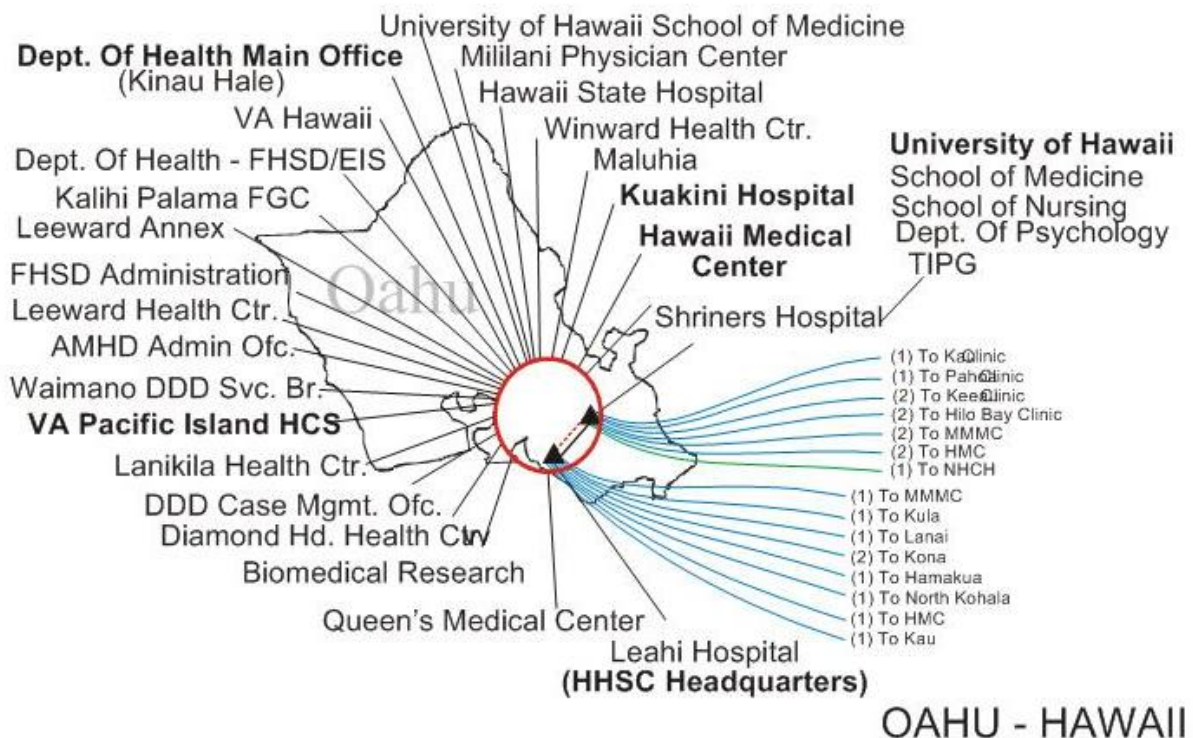


Figure 2 shows that the concentration of hospitals and healthcare providers in the capital city of Honolulu on Oahu. The island environment and concentration of specialists on the Island of Oahu makes it difficult for healthcare services to be delivered on all islands. Even where the distances may appear small by continental U.S. standard, the amount of time for interisland travel is considerable given airport security, traffic congestion in Honolulu, and distances that providers must travel on the neighbor islands; and the costs for travel are high, creating a significant challenge for the delivery of health care in the neighbor islands of Hawaii.

**Figure 2 – Concentration of Healthcare Providers in Urban Honolulu**



A major component of the Pacific Broadband Telehealth Demonstration Project is to assist in meeting the need for improved coordination, quality, and outreach of state and regional telehealth programs that address important health care problems in Hawaii and the Pacific Islands. The means of doing this is through establishing a seamless telecommunication infrastructure enabling the interconnection of existing networks and providing access to underserved areas. The program will build on the State Telehealth Access Network (STAN) and leverage existing networks of large health care providers (HCPs) to expand broadband capability and applications; and interconnect healthcare providers that are currently not connected to a telehealth network. The interconnection of HCPs in both urban and rural communities will leverage existing networks and technologies and provide improved services to those in remote and rural communities since the network will lessen the geographic barriers to healthcare.



The PBTDP will interconnect the State Telehealth Access Network to several networks, including the existing “Institutional Network” (INET) of the State of Hawaii that connects the Hawaii State government and the University of Hawaii. The PBTDP will also interconnect the networks of major healthcare providers in Hawaii and the Pacific, such as the Hawaii State Department of Health, the Hawaii Health Systems Corporation, the Hawaii Pacific Health (HPH) system, the Department of Veterans Affairs Pacific Island Health Care System (VAPIHCS), and the American Samoa Medical Center (ASMC). Healthcare organizations that connect to the Pan-Pacific Education and Communication Experiments by Satellite (PEACESAT) will also be interconnected, although the non-U.S. territories are excluded from the FCC grant program.

## II. Responsible Organization - Identify the organization that will be legally and financially responsible for the conduct of activities supported by the fund

The Telecommunications and Information Policy Group (TIPG) of the Social Science Research Institute (SSRI) of the University of Hawaii (UH) will serve as the responsible organization for planning, coordinating, implementing, and managing the Pacific Broadband Telehealth Demonstration Project. The TIPG is a unit of the Social Science Research Institute and network manager of the STAN and PEACESAT networks, and the interconnection point of presence for the E-Rate networks of the Commonwealth of the Northern Mariana Islands. The University of Hawaii is a logical coordinating agency for this project because it provides health care education and training, manages several telehealth and distance learning networks, and serves as a gateway to other networks including the Internet2.

The Research Corporation of the University of Hawaii (RCUH) will serve as the fiscal agent for the expenditure of project funds. TIPG interconnects to the UH Internet2 and will bridge Internet2 based distance learning and telehealth education and training applications to UH academic units. Telemedicine programs already traverse the network to UH academic units. The UH is an Internet2 site with a 10 Gbps connection to the Internet2 network.

The University of Hawaii and State of Hawaii Department of Health facilitated the development of this proposal and submitted it on behalf of the consortium applicants that include the State of Hawaii Department of Health, the Hawaii Health Systems Corporation, Hawaii Pacific Health, and all of the healthcare providers as listed in Table 1 of this proposal.

## III. Goal and Objectives - Identify the goals and objectives of the proposed network

### A. Goal

The goal of the FCC Pacific Telehealth Access Demonstration Project is to enable the delivery of broadband telehealth and telemedicine applications throughout the State of Hawaii and the Pacific Islands Region for clinical applications; continuing medical, nursing, and public health education; and electronic health records (EHRs) support.

## B. Objectives

The specific objectives of the Demonstration Project are to (1) interconnect the STAN with the telehealth networks of providers in the State of Hawaii and the Pacific Islands region; (2) expand the network applications, increase the number of healthcare providers, and (3) implement enabling network technologies. The interconnection will be based on a broadband mesh network to enable a full range of telehealth, telemedicine, and electronic health record applications to be offered to any site throughout the network.

### 1. Objective - Interconnecting Networks

There are several established networks within the State of Hawaii and the Pacific region that interconnect healthcare providers within their organizations and between organizations. These networks include the:

- State Telehealth Access Network
- Hawaii Health Systems Corporation Network
- Hawaii Department of Health Network
- Next Generation Network of the Hawaii State Government
- VA Pacific Island Health Care System Network
- Hawaii Pacific Health Network
- Pan Pacific Education and Communication Experiments by Satellite.

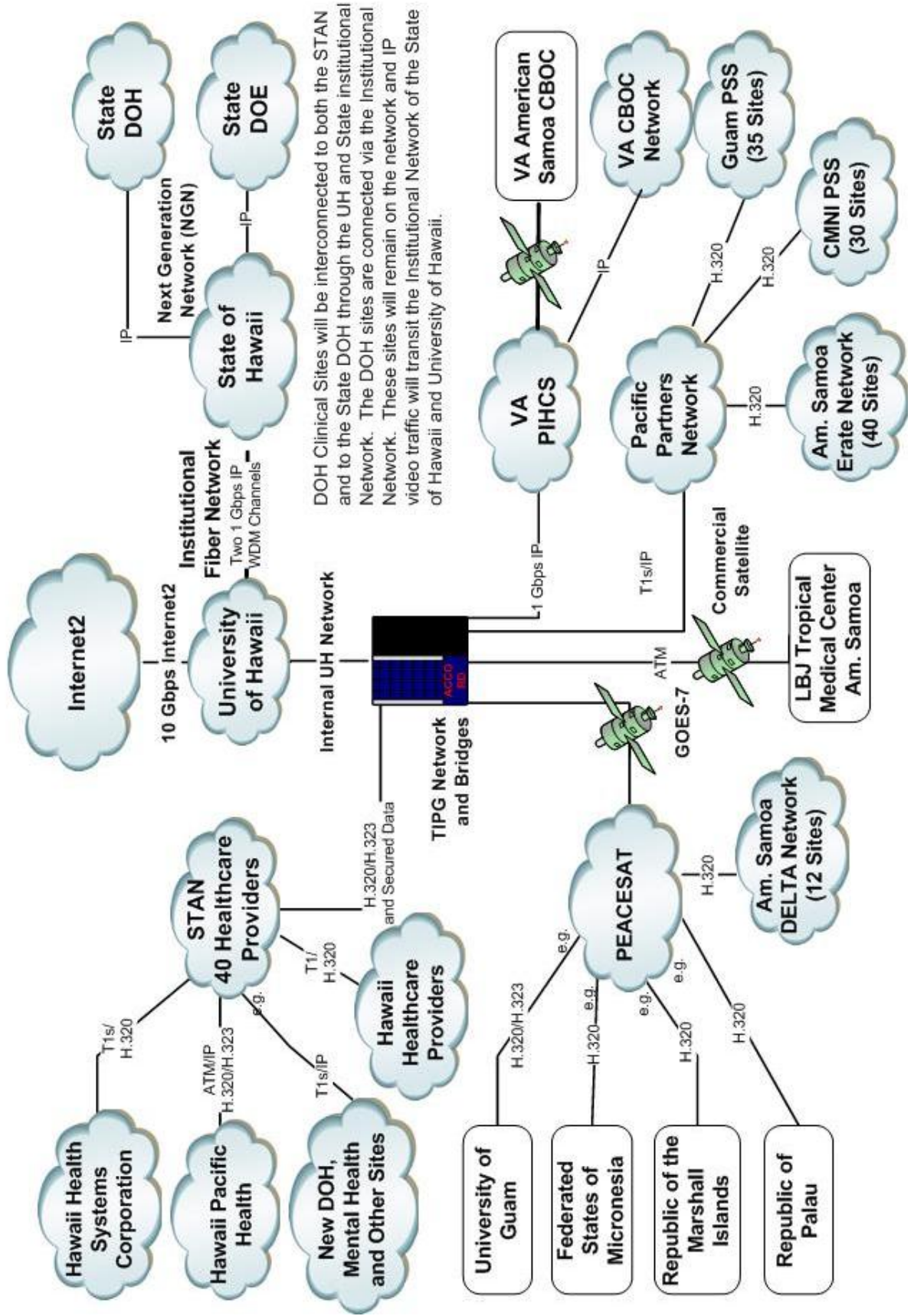
This pilot project will interconnect these networks and establish an interconnection point to the Internet<sup>2</sup>.

The interconnection of these networks is shown in **Figure 3 – Conceptual Representation of the FCC Pacific Broadband Telehealth Demonstration Project**. The Figure shows how existing networks will be interconnected and how new sites will be added. The “clouds” in the diagram are networks that consist of multiple sites. The tapered boxes show individual sites. At the core of the network is the interconnection of the University of Hawaii, the State of Hawaii and the Department of Health, and the other networks identified above.

The interconnection of existing networks is important since interconnection exponentially expands the value of a network to the other networks and their existing sites. Interconnection ensures the effective use of the resources of the separate networks.

While the total number of health care facilities in the existing networks is not represented in the diagram, the sites are listed in the Site List (Appendix 1). The Site List contains several clinics in the rural islands, including two Federally Qualified Health Centers (FQHCs) and one Native Hawaiian Health System site. In addition, there are several other

Figure 3 – Conceptual Representation of the FCC Pacific Broadband Telehealth Demonstration Project



primary health care clinics in the network. However, it should be noted that there are many other FQHCs and Native Hawaiian Health System providers that are not included. There was insufficient time for these organizations to identify matching funds to participate in Year 1 of the pilot program. It is anticipated, however, that many of these sites will participate in Year 2 of the pilot program and in future years under the FCC Rural Health Care Pilot Program.

Several of the major networks that will be cross-connected through this pilot program include:

**State Telehealth Access Network** - The STAN was initiated in 1999 by the Hawaii Health Systems Corporation, the Pan-Pacific Education and Communication Experiments by Satellite of the University of Hawaii, and the High Technology Development Corporation (HTDC) of the State of Hawaii. The STAN is funded in significant part by the Rural Health Care program of the Federal Communications Commission.

The Hawaii Health Systems Corporation was a primary partner in the development of the STAN. The HHSC is the 4<sup>th</sup> largest public hospital system in the U.S. The HHSC is an especially important provider network since its hospitals and clinics serve remote communities on the islands of Kauai, Maui, Lanai, and Hawaii. Their network is interconnected to the STAN and will be upgraded to support broadband applications with other non-HHSC healthcare providers.

**University of Hawaii Internet2** - The University of Hawaii has a dedicated 10 Gbps submarine fiber optics connection into the Internet2. The network is used by the academic units and also supports cross connections with the State of Hawaii. The TIPG will interconnect education and training programs offered by other academic institutions to the Pacific Broadband Telehealth Demonstration Project. As more healthcare providers throughout the nation become interconnected to the Internet2, the PBTDP will enable direct access to the other sites through a more closely coupled Internet2 connection. Since the STAN is already connected to the Internet2 for educational applications based on video and course management systems, expansion of cross-connections will not incur additional Internet2 fees.

**State of Hawaii Institutional Network (INET)** - The University of Hawaii and the State of Hawaii share telecommunication facilities and have cross-connections to each other. On the island of Oahu, the cross-connections are made through two 1 Gbps Wave Division Multiplexing (WDM) fiber optics connections.



**The Next Generation Network (NGN)** - The State of Hawaii government network is referred to as the NGN and consists of 1 Gbps cross-connections WDM fiber optics network links that were initially established to support OC-3 and OC-12 Synchronous Optical Network (SONET) broadband connections. Interconnections to the NGN are through various transmission media (fixed and wireless/copper, coaxial, fiber, wireless) that transit through core switches within the network.

The neighbor island networks are cross-connected through a combination of submarine fiber optics and WDM fiber and OC-3 digital microwave links. For sites located at these major nodes of the INET, the capacity of the network is sufficient to carry the desired traffic. However, the last mile connections have been problematic for many healthcare providers outside the main University campuses or State buildings. For these sites, direct connections into the STAN will be established and broadband IP switching will be used to interconnect sites already connected to the INET.

**Hawaii Health Systems Corporation (HHSC)** - The Hawaii Health Systems Corporation operates an internal network that relies substantially on Rural Health Care Program (RHCP) funding. The majority of the HHSC hospitals on the neighbor islands are designated as Critical Access Hospitals. The HHSC network is used for many telehealth, telemedicine (teleradiology, telecardiology), and electronic health record applications among its facilities.

The HHSC network will remain intact, though several links will be upgraded to provide interconnectivity among sites of the PBTDP. The sites that will be upgraded are the major hospitals on the neighbor islands and the central Headquarters and Leahi Hospital. Since the network is already receiving funding from the Rural Health Care Division (RHCD), no funds are requested as part of this PBTDP project. However, the major hospitals in the HHSC network will upgrade their VTC systems to support High-Definition (HD).

The HHSC has a cross-connection to the STAN. The expansion of the network cross-connections will enable more sites to be interconnected to each other and to reconfigure the cross-connections to lessen the overall cost of the network.

**Department of Veterans Affairs Pacific Island Health Care System** - The VAPIHCS's main campus in Honolulu will interconnect to the STAN initially through a single T1. The VAPIHCS Community Based Outpatient Clinics are already connected through funding provided by the Rural Health Care Division and interconnect back to the VAPIHCS main campus. The link will be used primarily to enable participation

and consultation with clinical sites through secure, encrypted tunnels. The VAPIHCS uses their network for the full range of telehealth and telemedicine services and information access to the VA Information System and Technology Architecture (Vista) system. The VAPIHCS is also the home of the Pacific Telehealth and Technology Hui that developed JANUS (interoperability system to view both VA and Department of Defense (DoD) health information) and the Hui OpenVista EHR that runs on Linux and uses GT.M. This system is currently being deployed to the Kauai region of the HHSC and is targeted as a test bed for interoperability between the VA and community hospitals.

**Hawaii Pacific Health (HPH)** - HPH has four hospitals (Kapiolani Women's and Children's Hospital, Kapiolani Medical Center at Pali Momi, Wilcox Memorial Hospital, and Straub Hospital) with several clinics. HPH uses an Asynchronous Transfer Mode (ATM) network core. HPH will cross-connect to the STAN so that their hospitals and clinics are able to communicate to all other sites in the network. The HPH Women's and Children's Hospital is the center for perinatologists to diagnose and treat problems throughout the State of Hawaii. The HPH placed teleultrasound units that have been utilized very successfully in the rural hospitals of HHSC. The network will permit this telemedicine application to be expanded and improved. HPH plans to place one of the units in the American Samoa Medical Center pending this application to the FCC because it requires a minimum of 768 Kbps that has not been available to the ASMC.

**Pan-Pacific Education and Communication Experiments by Satellite (PEACESAT)** - The PEACESAT uses the GOES-7, a decommissioned weather satellite, for communications into the Pacific Islands region. Additionally, the PEACESAT program supports the sites by providing technical support to the educational and healthcare providers in the region.

**Notes on the Interconnections** – There are several characteristics of the proposed network that are important. First, the PBTDP proposes to serve as a network of existing telehealth networks that will establish ubiquitous interconnections among the many sites. The interconnection will be based on a broadband IP network to enable a full range of telehealth, telemedicine, and electronic health record applications.

Second, the technical network connections will rely on secure tunneling and encryption technologies controlled by each of the network sites and parent organizations. IP Security, Virtual Private Network (VPN), Virtual Local Area Network, stateful firewall protection, and intrusion detection will be applied at the network and sites to secure traffic.

Third, since the University of Hawaii is already a member of Internet2, the PBTDP will not seek a direct cross-connection for other sites to the Internet2 until a greater number of non-academic member sites are connected to the Internet2. Should more non-academic healthcare providers connect to the Internet2 and provide services that are needed by the healthcare providers in the pilot project network, the connection will be extended.

Finally, the proposed network does not include all the smaller healthcare providers in Hawaii, including the Federally Qualified Health Centers, Native Hawaiian Healthcare System providers, and Pacific Island healthcare providers in Guam and the Commonwealth of the Northern Mariana Islands. Hopefully, these and others will become members of the network in Year 2.

## 2. Objective – Expanding and Enhancing Network Applications

The STAN interconnects with many healthcare providers and provider networks for telehealth and telemedicine applications. The internal networks of the larger health care systems support many different telehealth and telemedicine services (teleradiology, telecardiology, teleconsultations).

The Pacific Broadband Telehealth Demonstration Project will improve and expand the delivery of existing services and undertake new applications by providing broadband capacity to sites, cross-connecting existing networks, and interconnecting new sites. This will enable the following applications and uses of the network:

**Continuing Medical Education** – Continuing medical and nursing education is offered through the network and serves the critical continuing education needs throughout the State and the region. The courses, seminars, and workshops use lower-speed video teleconferencing combined with PowerPoint presentations and an open source Learning Management System (LMS).

The FCC Pacific Telehealth Access Demonstration Project will provide High-Definition (HD) television capability at a 720p resolution (that requires a minimum of 1 Mbps) so that continuing clinical education programs can be offered throughout the network. Not all sites will have the HD VTC units because of cost. However, all of the major hospitals of the STAN will have HD capable units and major DOH nodes will have the units based on their needs.

**Multi-Purpose District Health Offices** – The District Health Offices (DHOs) are multipurpose district centers that provide public health clinical services from immunizations to serving as sites for family genetic counseling and mental health. The State Department of Health agrees to make these multipurpose video teleconferencing facilities available to other health agencies and programs.

**Mental Health** – The State of Hawaii has major challenges in mental health care delivery on the neighbor islands. The availability of psychiatrists and psychologists to meet the needs in the rural communities is a significant problem. The PBTDP will help to meet the mental health needs for children, adolescents, and adults.

For example, the Adult Mental Health Division of the State Department of Health seeks to use telemental health to support clinical operations by reducing the amount of flying and travel time of psychiatrists and enabling better response for emergencies and follow-up (e.g., adjusting medications). The shortage of psychiatrists is felt most strongly on the island of Hawaii, where it may take several hours for clients to travel to the main office in the cities of Hilo or Kona or for the doctor to travel to remote communities. The AMHD also seeks to enable the psychiatrists on Maui to better serve their patients on Lanai and Molokai, where there are no resident psychiatrists. The psychiatrists and psychologists would deliver services from their main office to remote sites both rural and urban. The mental health clinicians require a high resolution video teleconferencing system to clearly observe patient non-verbal behavior.

Currently the major mental health service providers do not have adequate access to telecommunication network services. This proposal will connect the State of Hawaii Adult Mental Health Division, the State of Hawaii Children and Adolescent Mental Health Division, the University of Hawaii Department of Psychology and the University of Hawaii Mental Health Services Research, Evaluation, and Training Program.

**Family Genetics Counseling** - Pediatric and adult genetic services are provided under a collaborative arrangement with the Department of Health, Kapiolani Medical Center, Queen's Medical Center, and the University of Hawaii John A. Burns School of Medicine. The collaborative organization is named Hawaii Community Genetics (HCG) and organizationally is under the umbrella of Kapiolani Medical Center. All the participating entities provide resources to Hawaii Community Genetics to sustain it since pediatric and adult genetics is a much needed, but poorly reimbursed specialty. Currently there are two M.D. clinical geneticists, four genetic counselors, one genetics nurse, and one dietician providing services for HCG. A combination of



Honolulu face-to-face clinics, neighbor island face-to-face clinics, and telehealth sessions are used to provide genetic services statewide.

Currently, the telehealth sessions are conducted between the Diamond Head video conference center (VCC) and the neighbor island state VCCs. The district health offices currently do not have their own video teleconference capabilities. The sessions involve one of the DOH genetic counselors and one of the Hawaii Community Genetics geneticists. Telehealth is used generally for patients that require only verbal follow-up or counseling (i.e., no need for great visual connection). Telehealth consultations have been initiated with families who want initial consultation about alpha thalassemia since this does not require a physical examination.

**Teleultrasound** – Hawaii Pacific Health (HPH) is a system of four hospitals and several clinics. HPH received a grant from the National Telecommunications and Information Administration (NTIA) of the U.S. Department of Commerce to install and provide specialized Tandberg units that can be used for Fetal Ultrasound for high risk pregnancies. The fetal ultrasound units require a minimum of 768 Kbps for high resolution imagery. This enables the diagnosis of over 3,000 possible problems. The need for this service is great since there is only one group of perinatologists in Hawaii that provides these services. The PBTDP network would provide the infrastructure for continuing the consultations and enable the remote sites to participate in other consultations with specialists.

The other services to be provided through the use of the teleultrasound units include Women's OB / GYN TeleUltrasound, Pediatric TeleCardiology, and Children's Specialty TeleServices, which includes rheumatology and pre- and post-transport neonatal intensive care unit (NICU) teleconsultations.

Additionally, HPH will use the system for CME in Surgery, Grand Rounds, Pediatric OB / GYN, and pre- and follow-up Cancer Treatment Conferences.

**Pediatric Services** – The Shriners Hospital for Children is a major user of the STAN for both diagnostic and follow-up clinical consultations. The Shriners Hospital specializes in pediatrics and provides medical treatment and research in orthopaedic, burn, and spinal cord injury care. Located in Honolulu, the Shriners Hospital provides care to all of Hawaii and the Pacific Islands Region. Although Shriners will use available telemedicine links that are narrowband, the clinicians have expressed the need for high quality video motion and resolution to be able to diagnose, treat, and undertake accurate teleconsultations. The

PBTDP will provide the appropriate level of resolution and movement to facilitate the pediatric consultation needs of the Shriners Hospital for Children.

**Electronic Health Record (EHR)** – There are four EHR projects that will use the PBTDP. First, the HHSC will upgrade its network link from the West Kauai Medical Center (WKMC) and the Samuel Mahelona Medical Hospital (SMMH) to support the OpenVista EHR. Second, the State of Hawaii Children and Adolescent Mental Health Division (CAMHD) will use the network for implementing an EHR solution. Training will be provided by the Department of Psychology through a separate contract between the DOH and the UH. Third, the State of Hawaii Adult Mental Health Division is currently implementing the Avatar EHR which will also use the network. Fourth, the TIPG at the University of Hawaii will use the network to support the implementation of the Hawaii OpenVista Electronic Health Record system as an application service provider (ASP). This project is funded by the Medicaid Transformation Grant received from the U.S Department of Health and Human Services. The infrastructure will also support the network interconnections between the other non-profit health care networks such as Hawaii Pacific Health and the Veteran's Administration (VA). However, there are no interoperability demonstration projects at this time since interoperability capabilities are still emerging.

**Support of Federal Programs** – The proposed network will also facilitate the goals and missions of several federal agencies and departments. For example, it will enable the U.S. Department and Human Services to more effectively reach out to the rural areas of Hawaii and to the other Pacific Island jurisdictions to provide technical assistance and services. Moreover, it will enable HHS funded programs in Hawaii and the Pacific to more effectively provide services and programs in the health professions, maternal and child health, HIV/AIDS, disaster and avian flu prevention and control, etc.

TIPG/STAN/PEACESAT have a long history of partnership with the U.S. Department of Health and Human Services. Since 1999, the networks have served as critical support for the Pacific Basin Telehealth Initiative of the Health Resources and Services Administration, HHS. TIPG currently works closely with the HHS Region IX-Office of Pacific Health and Human Services, Office of the Regional Health Administrator to facilitate the use of videoconferencing by HHS components (e.g., CDC uses the network to provide TB consultative services to Pacific jurisdictions and HHS-funded genetic and HIV/AIDS programs use it to provide consultative services.) The HHS-Region IX office believes that

the proposed network will also provide an avenue to enhance struggling health professions programs in the Pacific.

Similar to HHS, other U.S. departments have used STAN to provide services. The U.S. Department of Agriculture held sessions that reached farmers in rural communities to inform them of changes in rules of the Food and Drug Administration. The U.S. Ambassador in the Federated States of Micronesia (FSM) has held several Federal-State video-teleconferences to facilitate coordination among federal agencies working with the FSM government.

### 3. Objective – Implementing Enabling Network Technologies

The Pacific Broadband Telehealth Demonstration Project will use the full spectrum of network and interconnection technologies with the intent of demonstrating the value of broadband technologies. In this regard, there are several problems that the network will seek to resolve. First, the current networks use lower-speed analog video teleconferencing system technologies. Unfortunately, the analog NTSC output, at any speed, does not provide the resolution needed to display high quality imagery. As such, the courses and continuing medical education seminars cannot be used for presentations that require higher definition imagery (e.g., CT, MRI, x-ray, etc.). The current, lower-speed video network (e.g. 384-768 Kbps) of the State Department of Health does not enable good video motion or resolution since the lower Committed Information Rate (CIR) and general Internet connections (e.g., cable and DSL) causes dropped packets that generates frame freezes, pixelization, and video degradation.

This application seeks to resolve a major problem in using telecommunications for clinical education by improving the networking capacity through the use of High-Definition (HD) video teleconferencing capabilities. Not all sites require HD VTC capabilities. However, the major clinical centers will require HD because they generally function as multi-purpose sites.

Other health care facilities will also require increased data rates based on application requirements. As an example, American Samoa Medical Center (ASMC) currently is not able to take full advantage of bandwidth intensive applications such as the Hawaii Pacific Health (HPH) teleultrasound application. HPH invited American Samoa to participate in a program funded by the U.S. Department of Agriculture that would have provided American Samoa with a teleultrasound unit. Unfortunately, American Samoa was unable to participate in the

program due to limited bandwidth and because Integrated Services Digital Networking is not available in American Samoa. The telecommunication carrier refuses to designate capacity for this purpose due to the high cost of satellite communications in the Pacific Islands region.

#### IV. Costs

The Pacific Broadband Telehealth Demonstration Project is requesting funding, in accordance with the FCC guidance, for (1) planning the connectivity of the telehealth network; (2) transmission facilities, including routers and video codec units, and multipoint bridges; and, (3) telecommunications connectivity for both urban and rural healthcare provider sites. The overall cost of the project is budgeted at \$5,727,015 for the two-year period. The first year cost is budgeted to be \$3,358,465 and the second year at \$2,368,550. The Budget Summary and Budget Details are in Appendix 2.

#### V. Describe how for-profit network participants will pay their fair share of the network costs

The collaborators of the Pacific Broadband Telehealth Demonstration Project are non-profit organizations. In the future, should private for-profit organizations request interconnectivity (e.g. clinical laboratories), the for-profit organizations will be required to pay for their own interconnection to the network and for network support. Currently the STAN network has a fee structure for the use of the network bridge and cross-connection to the STAN sites by for-profit users.

#### VI. Sources of Financial Support

Matching financial support will come from several sources. First, savings from the current narrowband connections will be used to help meet the matching requirements of the network and equipment. Second, matching funding will be sought from the rural healthcare and other program offices of the State of Hawaii for interconnection equipment and network services in the rural sites. Finally, local general and internal funding will be sought to meet the matching requirement. The match will be provided in cash and sites that are unable to find the match will not be interconnected to the network and their allocated funds will be returned to the FCC. Additionally, funds will be sought from other grant opportunities such as the U.S. Department of Agriculture Distance Learning and Telemedicine program. The funds will be expended in accordance with guidance provided by the Rural Health Care Division of the Universal Service Administrative Company.

While in-kind support is not recognized by the FCC for the purposes of this grant, it is nevertheless important to note that there will be a very significant amount of in-kind support for the demonstration project. This application will be supported in part through the State Telehealth Access Network (STAN) that helps to facilitate the operational costs for bridging networks and programs; the Institutional Network (INET) between the State of Hawaii and



University of Hawaii; the Next Generation Network (NGN) of the Hawaii State Government that interconnects the State Department of Health to the Institutional Network; the Pan-Pacific Education and Communication Experiments by Satellite (PEACESAT) program funded by the National Telecommunications and Information Administration (NTIA) of the U.S. Department of Commerce; and other federal programs including the Medicaid Transformation Grant for Electronic Health Records. The resources of these programs provide in-kind networking and cross-connection resources that help to optimize the Pacific Broadband Telehealth Demonstration Project.

## VII. Healthcare Facilities Included in the Network

The full list of healthcare facilities that will be included in the network is in **Table 1**. Many of these facilities are already connected to an existing network. 54% are located in rural areas in accordance to current Rural Health Care Program definitions and 46% are in urban areas. The bridging of these networks will enable a seamless and secure integrated network. The network design will incorporate secure data routing for video bridging and data transfer to different locations. For the interconnection between the University (UH) and the State Information and Communication Services Division (ICS), traffic will be routed between the TIPG, over the UH network, and to the DOH, through the State government INET network. The data networks will be linked to the DOH through the UH-State NGN using tunneling through Virtual Private Network (VPN) facilities or through Virtual Local Area Network (VLAN) technologies. The video data will be interconnected to the bridge through secure IP as well, although VTC systems at some sites do not support encryption. The PBTDP will make as much use as possible of existing facilities, such as the INET, to ensure that the network is sustainable.

**Table 1 – List of Sites to be included in the FCC Pacific Broadband Telehealth Demonstration Project**

### **DOH Network**

Lanakila Health Center  
Diamond Head Health Center  
Hawaii State Hospital  
State Laboratory Facility  
DDD Case Management Office  
Ala Moana Health Center  
Waimano DDD Services Branch  
Kona Health Center  
Wailuku Health Center  
Molokai Health Center  
Adult Mental Health Division  
Waiakea Complex  
Leeward Health Center  
Windward Health Center

Family Health Services Division

### **State Telehealth Access Network**

Maui Memorial Medical Center  
Kula Hospital  
Lana'i Community Hospital  
Hilo Medical Center  
Hale Ho'ola Hamakua  
Ka'u Hospital  
Hilo Bay Clinic  
Keeau Clinic (Family Health Center)  
Pahoa Clinic (Family Health Center)  
Kau Clinic (Family Health Center)  
Kohala Hospital  
Kona Community Hospital  
North Hawaii Community Hospital  
West Kauai Medical Center (Formerly Kauai Veterans Memorial Hospital)  
Samuel Mahelona Memorial Hospital

Leeward Annex	Maluhia Hospital
Case Management Services Branch	Leahi Hospital
Hawaii County Community Mental Health Center	Physician Center at Mililani
Hansens	Kuakini Health System
Waimea Health Center	Hawaii Medical Center (Formerly St. Francis Medical Center)
Kailua Family Guidance Center	Shriners Hospital
Honokaa Mental Health Center	University of Hawaii School of Nursing & Dental Hygiene
Puna Community Mental Health Center	Department of Urban and Regional Planning
Kauai Community Mental Health Center	Agricultural Development in the American Pacific
Hana Maui	University Department of Psychology
Wahiawa Community Mental Health Center	University Affiliated Program (Wist Hall)
Maui Family Guidance Center	University of Hawaii Telecommunications and Information Policy Group
Diamond Head Health Center	University of Hawaii School of Medicine - Mililani Physician Center
Kona Community Mental Health Center	University Department of Psychology
Kalihi-Palama Family Guidance Center	American Samoa Medical Center
Dept of Health - Family Health Services Division/Early Intervention Services	ASCC and AS Department of Public Health
Hawaii County Community Mental Health Center	U.S. Department of Veteran Affairs – Pacific Island Health Care System
Kona Community Mental Health Center	Kauai Community Health Center, Waimea (FQHC)
Kau Community Mental Health Center	Kauai Community Health Center, Kapaa (FQHC)
Waimea Family Guidance Center	Hui Malama Ola Na OIwi, Hawaii (FQHC/NHHS)
Kona District Health Office	
BT CMIS DDD Office	
STD/Aids	<b>DOH Sites Connected via INET</b>
Kapaa Health Center	Department of Health – Main Office (Kinau Hale)
Hanapepe Health Center	DOH/AAFES
Kau Health Center	State Office Tower
Kohala Health Center	Capitol Center Building
Honokaa Health Center	Kakuhihewa Building
	Waipahu Civic Center
	Hilo State Office Building/DOH
	Maui State Office Building/DOH
	Kauai District Health Office

The Pacific Broadband Telehealth Demonstration Project will, for the first time, enable seamless interconnection among this extensive list of sites. The STAN was initially established as a network for hospital systems and academic health and medical programs. Over time, it

grew to support several clinics, but did not include the State Department of Health clinical service offices. The proposed network will be inclusive of all of the major Hawaii Department of Health clinical sites, including the multi-function District Health Offices and the Clinical Behavioral Health (Adult Mental Health and Children and Adolescent Mental Health) offices. The Hawaii DOH Administrative Offices will be interconnected to the network since they are central server and system sites; however, they will not require funding since they are already interconnected to the State Next Generation Network that has a 1 Gbps link to the University of Hawaii.

District Health Offices – Each of the neighbor island counties has at least one district health office (DHO) that is responsible for serving their communities with proficiencies in emergency preparedness, public health nursing, family health services, services for the developmentally delayed, environmental health services, and vital statistics. The DHOs support several clinical services in a number of rural communities, ensuring basic health care access. Inclusion of the DHO sites in this project would allow an expansion of its consultation, care coordination, case management, and screening services. Additionally, the DHOs develop and implement a variety of public health education programs, ranging from community rural health development to emergency preparedness to chronic diseases associated with lifestyles. The ability to include other sites on the system for these educational sessions would both enhance the education that can be provided and help to reduce travel costs and time of educators.

Child and Adolescent Mental Health Division – The Child and Adolescent Mental Health Division (CAMHD) provides timely and effective mental health prevention, assessment and treatment services to children and youth with emotional and behavioral challenges, and their families. While the CAMHD has grown its capacity to serve the thousands of children and youth with emotional and behavioral challenges, many neighbor island communities still remain mental health shortage areas. Inclusion of the CAMHD helps in two ways. First, providing broadband access to remote sites allows teleconsultations to occur that might otherwise be difficult to schedule or arrange. Teleconsultations would allow greater contact with clients and ability to modify treatments in a timely manner. Second, the CAMHD is currently exploring an electronic health records system to provide better case management and reporting. Having remote sites connected through broadband access will facilitate efforts to provide a complete record for all clients. In addition, the Felix Consent Decree requires that all students that require special services be afforded those services, even in areas where service shortages exist. This network would enable the better provision of mental health services in shortage areas and comply with the Felix Consent Decree.

Adult Mental Health Division – The Adult Mental Health Division (AMHD) provides services to approximately 12,000 adults with severe and persistent mental illness through state-maintained community mental health centers located throughout the state and through contracts with private providers. Participation in this project allows the provision of services in areas that are persistently classified as mental health

shortage areas. This system would allow mental health professionals in populated areas to participate in the care of remote clients by providing telemental health sessions with clients and in developing care plans with professionals in the remote areas. Because of distances involved and the island nature of the state, time that would be used in traveling to care for clients could be used in caring for more clients. In addition, this system would allow a better mechanism for dealing with urgent situations in rural areas.

Other Hawaii State Department of Health Organizations – Several other organizations within the State Department of Health provide services to clients with specific needs and will see benefits from the expansion of broadband services to remote areas. Some anticipated benefits include better surveillance, reporting, and monitoring of cases of tuberculosis, Hansen’s disease, and sexually transmitted diseases.

Two important Pacific regional sites will also be interconnected: the American Samoa Medical Center (ASMC) and the U.S. Department of Veteran Affairs Community Based Outpatient Clinic in American Samoa.

American Samoa Medical Center - The American Samoa Medical Center (ASMC) will be interconnected to the State of Hawaii Telehealth Access Network for the first time with broadband connectivity. Historically, the U.S. territories (American Samoa and Guam) and the Commonwealth of the Northern Mariana Islands (CNMI) have not been able to take advantage of the Rural Health Care program because the current law and rules were designed for states and do not permit inter-state connections, with the exception of Alaska. The remote Pacific Island territories are “all rural” and the FCC has provided a 50% discount for advanced telecommunication services. However, the rules do not permit “all rural” territories to interconnect with urban areas outside their jurisdiction. The interconnection of the ASMC through the Pacific Broadband Telehealth Demonstration Project will enable ASMC participation in all the CME programs and telemedicine applications, such as the telefetal ultrasound diagnostic capabilities through equipment that will be provided by Hawaii Pacific Health. The telecommunication link will also allow the full range of services provided through federal grants from the U.S. Department of Health and Human Services. Additionally, the interconnection will enable the ASMC to participate in VistA electronic health record system training. The ASMC plans to allow the American Samoa Community College (ASCC) and the American Samoa Department of Health (AS-DOH) to participate in the use of the network for medical, nursing, and public health education and training provided by the many programs that are based in Hawaii.

Department of Veterans Affairs/Pacific Island Health Care System/American Samoa Community Based Outpatient Clinic – The VAPIHCS of the U.S. Department of Veterans Affairs (DVA) is planning to open a VA Community Based Outpatient Clinic (CBOC) in American Samoa. For the same reason as the ASMC, the DVA has been struggling with interconnecting the CBOC in American Samoa to the VAPIHCS in Honolulu, specifically the high cost of telecommunications in the Pacific Islands. The interconnection will enable veterans in American Samoa to receive telehealth services



from the VA and other clinical specialists in Honolulu. The VAPIHCS will also interconnect to the PBTDP and will enable the VA CME programs to be offered throughout the network. The network will form the basis of EHR data exchange between the ASMC and the CBOC.

The VA, through TRICARE, purchases more than \$30 million in services each year from community healthcare providers, especially in the islands outside of Oahu because the CBOC in these locations do not have the full complement of healthcare technologies (e.g., medical imaging) and services (e.g., emergency services). However, medical data among the systems cannot be exchanged, creating great inefficiencies in the delivery of services and the potential for medical errors.

Pacific Island healthcare providers in Guam and the Commonwealth of the Northern Mariana Islands (CNMI) were unable to plan and identify budgetary resources for a cash match that could be committed for a Year 1 implementation due to their very difficult financial situation. Healthcare providers in the CNMI and Guam have requested consideration for Year 2 of the FCC grant.

#### VIII. Provide the address, zip code, Rural Urban Commuting Area (RUCA) code and phone number for each health care facility participating in the network

Appendix 1 is list of the sites that will be interconnected to the Pacific Broadband Telehealth Demonstration Project. The full address, RUCA, contact, and phone number for each facility participating in the network may be found in Appendix 1. It should be noted that many of the STAN sites are not included in the PBTDP request for funding since they are currently funded under the Rural Health Care Program of the FCC.

#### IX. Previous Experience in Developing and Managing Telemedicine Programs

The collaborators of the Pacific Broadband Telehealth Demonstration Project have extensive experience in developing and operating telehealth and telemedicine programs and have experience in addressing the many complex use, application and program issues; technical design, implementation and operations support; and procedural issues associated with interconnected health networks. The larger healthcare system providers such as the Hawaii Health Systems Corporation, Hawaii Pacific Health, and the VA Pacific Island Healthcare System already have extensive internal networks that support teleradiology, telepathology, teleultrasound, and related applications. Additionally, the State Telehealth Access Network was established in 1999 and provides network applications for the other hospitals and clinics. Participants in the network use current network facilities for continuing medical, nursing, and public health education programs; for remote telehealth and telemedicine consultations; for transmission of medical imaging; and for electronic health data exchange. The network is being used extensively. Over the past 6 years STAN has connected

to more than 500 distinct video teleconferencing sites and conducted over 5,000 inter-network conferences within the state, regionally and internationally, for education and training.

## X. Project Management Plan

The project management and work plan and schedule of milestones are described here.

### A. Project Leadership

The project will be managed by Dr. Norman H. Okamura and Christina Higa, the Director and Associate Director of the Telecommunications and Information Policy Group of the Social Science Research Institute. Both have extensive experience in the planning, management, maintenance, and support of public service telecommunications networks. Dr. Okamura is a Faculty Specialist in Telecommunications Policy, Planning, and Management; the Chair of the Telecommunications and Information Resource Management (TIRM) Graduate Certificate Program in the School of Communications and Journalism; the Principal Investigator of the Hawaii OpenVista Application Service Network (HOVAN); and the State Telehealth Access Network. Christina Higa is the Associate Director of the TIPG and Director of the Pan-Pacific Education and Communication Experiments by Satellite program, and a director of the Pan-Pacific Distance Learning Association and Pacific NewsNet. Their curriculum vitae are included in Appendix 4.

From an administrative perspective, the University of Hawaii and the TIPG are well positioned to administer the project. TIPG is very familiar with the rules and regulations of the Rural Health Care Program and its requirements. TIPG also assists the HHSC and other HCPs that currently apply for Rural Health Care program support and is familiar with the certification requirements and work to be performed.

The financial administration for the network will be handled by the Research Corporation of the University of Hawaii. The RCUH is a public corporation established by the Hawaii State Government in 1965. In 2006, the RCUH handled over \$290 million in external funding on behalf of the University of Hawaii, the State of Hawaii, and the federal government. As such, the RCUH complies with all federal requirements and the University of Hawaii and the RCUH conduct annual Federal Single Audits. The RCUH will account for both federal and participant financial payments and expenses.

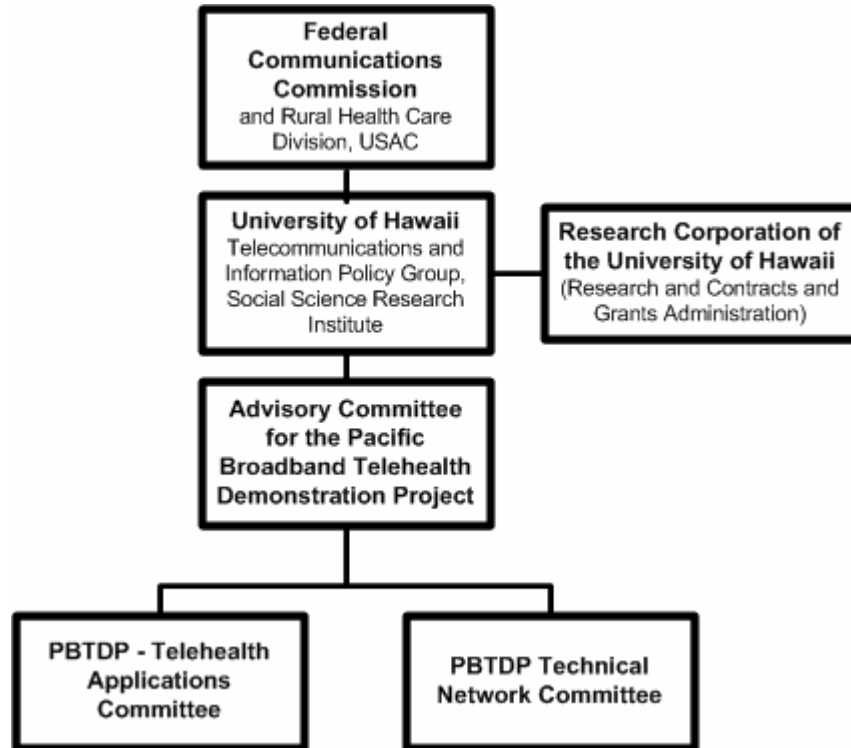
### B. Management Structure

The Management Structure for the project is represented in Figure 4.

The management structure begins with the Federal Communications Commission and the Rural Health Care Division of the Universal Service Administrative Company (USAC) that will provide guidance to the University of Hawaii and the consortium applicants on grant conditions and grant management.

Within the University of Hawaii, the TIPG will manage the pilot project. Financial accounting and administration will be handled by the TIPG through the Research Corporation of the University of Hawaii.

**Figure 4 – Management Structure for FCC Pilot Project**



The TIPG project managers will establish an Advisory Committee for the Pacific Broadband Telehealth Demonstration Project. The Advisory Committee will consist of representatives of all the organizations and meet on a quarterly basis, and more if needed. There will be no limitations on the number of people that can attend from an organization.

The project will form two working committees that will meet on an as-needed basis. A Telehealth Applications Committee (TAC) will include policy and program representatives from all the PBTDP participants. The mission of the TAC will be to discuss collaborative telehealth and telemedicine projects and address policy and program issues such as HIPAA compliance and partnering agreements. The TAC will coordinate schedules for continuing medical, nursing and public health education and training.

A Telehealth Technology Committee (TTC) will also be formed and will include network and technology specialists from each of the participating organizations. The mission of the TTC will be to focus on specific technical problems and/or issues such as security, network operations, and other technology issues. It is anticipated that a subgroup may be formed to meet the more demanding needs of coordination and network configuration of the larger networks, including the Department of Health, HHSC, VAPIHCS, Hawaii Pacific Health, and the UH.

## C. Work Plan

Following approval by the FCC, the following major tasks of the Work Plan will be undertaken:

1. **Planning and Coordination Meetings** – Teleconferences will be held with the Advisory Committee to discuss the nature of the FCC approval and any limitations or conditions to the grant application. The initial meetings will focus on the planning of the network and services; and, any policy, program, and technical issues with regard to the implementation of the project.

Meetings of the TAC and TTC will be held to ensure that collaborators are updated on any issues and problems.

The planning will continue through Year 2 of the Project. The objective is to expand the number of healthcare providers in Hawaii and the Pacific region that were unable to participate in Year 1 (due to funding and time constraints). In addition the PBTDP will expand the number of Federally Qualified Health Care (FQHC), Native Hawaiian Healthcare System providers, and other rural healthcare providers to the network. The PBTDP will continue to utilize Rural Health Care Program funding to support new sites. Planning will continue to ensure program sustainability through network partnering and cost sharing agreements.

2. **Technical Network Design and Plan** – The technical network design and plan will address the security requirements of the University of Hawaii, State of Hawaii Information and Communication Services Division, the U.S. Department of Veterans Affairs, the State Department of Health, and other healthcare providers. All network connections will be compliant with the Health Insurance Portability and Accountability Act (HIPAA).

There are two primary alternatives that are being examined for the implementation: Virtual Private Network (VPN) and Virtual Local Area Network (VLAN) over the State NGN. **Figures 5 and 6** show a conceptual representation of the two primary means of interconnection (VPN and VLAN) between the University of Hawaii and the Hawaii State Department of Health.

**Virtual Private Network** - The first alternative involves use of VPN and tunneling technologies to interconnect the data users to the DOH network through the Institutional Network (INET) that connects the University of Hawaii and the State of Hawaii (NGN). Data from the sites will be encrypted through existing routers at the sites and passed

Figure 5 - Option 1 – VPN over INET

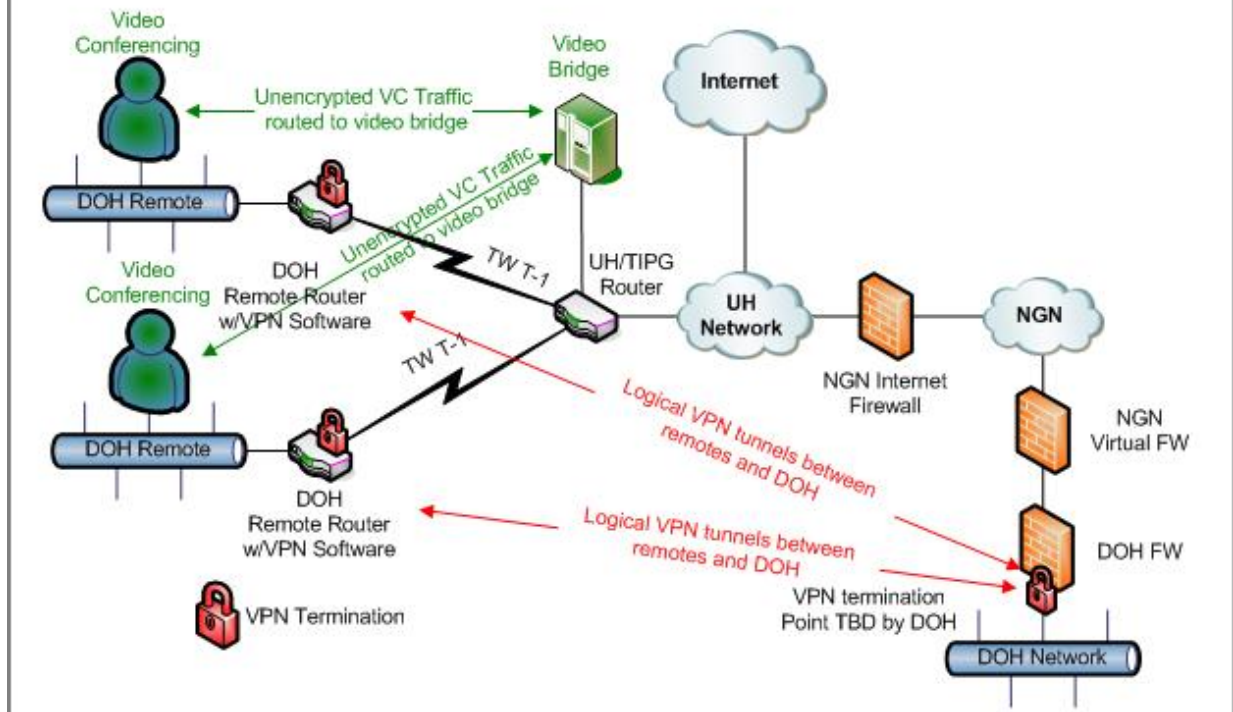
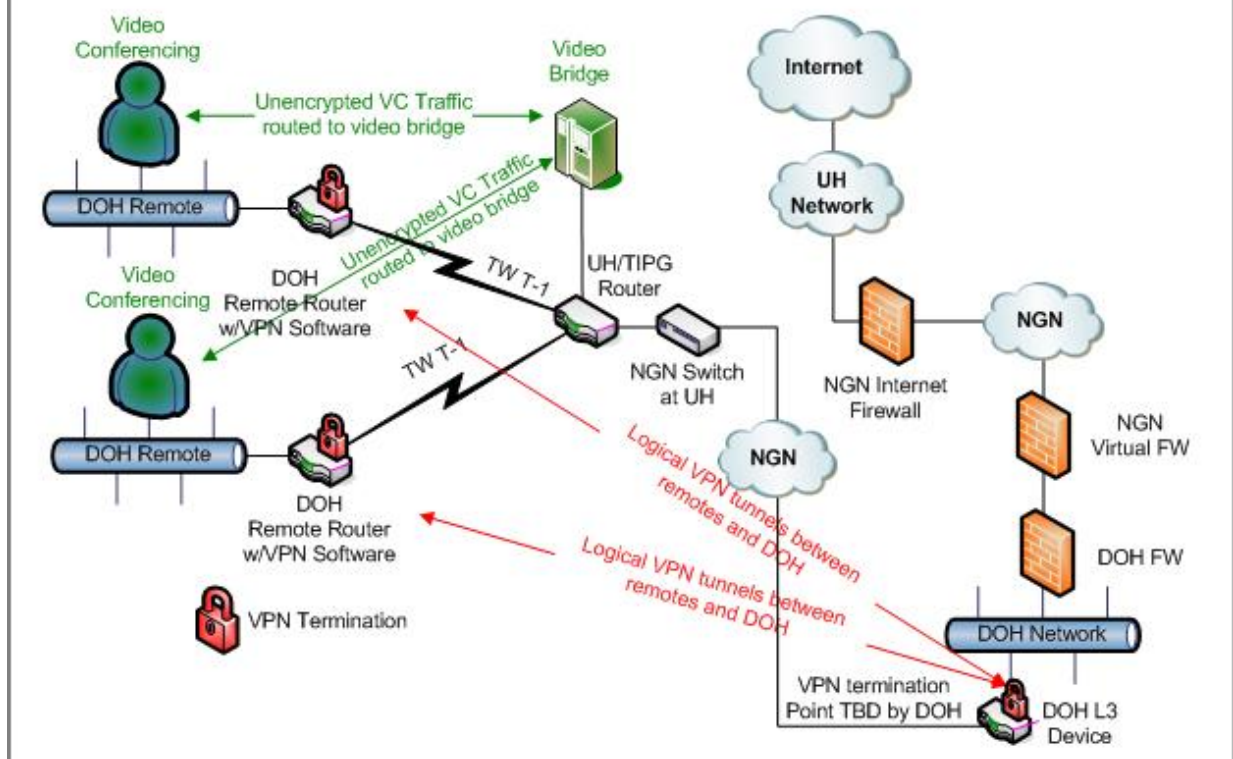


Figure 6 - Option 2 – VLAN over NGN at UH



to either the STAN video bridges or through the Virtual Private Networking (VPN) tunnels to the DOH. The data will be encrypted and decrypted to interconnect the appropriate servers in the network. Data that need to access servers at the remote sites would traverse the same system but be interconnected through separate tunnels. Video teleconferencing interconnections would be passed through separate tunnels to the UH STAN Network Operations Center and automatically routed to the appropriate sites.

**Virtual Local Area Network** - The second alternative is to use the Virtual Local Area Network (VLAN) emulation capabilities in the NGN switch at the University to extend the DOH network through the UH to the STAN and to the sites. The VLAN solution is still being studied.

Within the site facilities, the internal connections that serve multiple users will need to be reconfigured to add video teleconferencing capabilities and ensure security.

The network design will use tunneling VPN or VLAN and data encryption to be performed at the sites. This will require that the end-point equipment be configured throughout the INET connections.

A final decision on the VPN or VLAN option will be made upon award of the FCC grant. Once the final decision has been made and the organizations satisfied, the design will be implemented through procurement of goods and services, acceptance of network transmission and other equipment, configuration of the network and equipment, and installation.

3. **Procurement of Services and Equipment** – Bids will be issued for the network and network equipment. The bids will be prepared by the TIPG and issued by the Research Corporation of the University of Hawaii. The UH will use, to the extent possible, existing contracts for equipment and services (e.g., routers). However, bids will need to be issued for certain equipment such as High- Definition video teleconferencing systems that are not on UH or State Price Lists.
4. **Installation and Initial Training** – The installation will include managing the implementation of circuits and delivery, configuration, and testing of the network transmission equipment. Once the sites and segments of the network have been completed, the sites and healthcare clinical and support staff will be provided with basic training in the use of the system.
5. **Ongoing Network Support** – The Pacific Broadband Telehealth Demonstration Project working groups will continue to plan with each

of the collaborator's telehealth applications site coordinators. Planning is needed to ensure that the individual sites are able to traverse the extensive network in a secure manner.

6. **Project Administration** – The TIPG will be responsible for ensuring that the project complies with all requirements of the FCC and the Rural Health Care Division of the Universal Service Administrative Company. Any reports requested by the FCC or RHCD will be provided.

## D. Schedule

Figure 7 shows the quarterly schedule for the implementation of the PBTDTP, based on the identified tasks. The applicants are confident that the schedule can be met.

**Figure 7 – Implementation Schedule for Pacific Broadband Telehealth Demonstration Project**

Task ID	Task Name	Year 1				Year 2			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
1.0	Establish and Initiate Meetings with Partners	XX							
1.1	Review Award	XX							
1.2	Respond to problems at Sites	X	XX	XX	XX	XX	XX	XX	XX
1.3	Plan and Finalize Technical Network Design	XX							
1.4	Issue Bids	XX							
1.5	Procure Network Transimssion and Equipment	XX							
2.1	Test and Implement Sites on Oahu	X	X						
2.2	Test Network and Implement Neighbor Island Sites		X						
2.3	Initiate Basic Training on Network	X	XX	XX	XX	XX	XX	XX	XX
3.1	Monitor general usage of the network		XX	XX	XX	XX	XX	XX	XX
3.2	Plan Applications and Connectivity	XX	XX	XX	XX	XX	XX	XX	XX
3.3	Respond to problems at Sites		XX	XX	XX	XX	XX	XX	XX
4.0	Review and Plan Internet2 Connections			XX					
4.1	Implement Internet2 Connection to HCPs in US				XX				
5.0	Administer the Project	XX	XX	XX	XX	XX	XX	XX	XX
5.1	Financial Billing and Support	XX	XX	XX	XX	XX	XX	XX	XX
6.0	Prepare and Submit Final Project Report				XXXX	XX		XX	XXX

## E. Budget

The proposed budget to initiate the Pacific Broadband Telehealth Demonstration Project includes the cost of personnel to plan and implement the network; network transmission costs; transmission and interconnection equipment.

The budget summary and details may be found in Appendix 2. The budget includes the following major components: Network Equipment; Analog VTC Systems; and HD VTC systems.

- **Network Planning** – The network planning and implementation of the network and services will be facilitated by the UH TIPG in coordination with the Working Groups.

- **Network Equipment** – Each remote site will have a VPN router to provide secure data communications back to the main DOH site. All traffic being passed between each remote site and the main DOH office will be transported in an encrypted tunnel to allow for secure communication of confidential data. Video and Internet traffic will not enter the secure VPN tunnel but will be passed directly to the University of Hawaii Telecommunications and Information Policy Group (UH TIPG) for transit to the video bridge or Internet.

Each remote site will be connected via one or more T1s. All the T1s from the remote sites will be aggregated into one or more multi-channel DS3s which will be terminated at UH TIPG. All video and internet traffic will exit here and will be cross-connected with the UH network allowing access to the multipoint bridging facilities, Internet, Internet 2, and other sites attached to the network. VPN traffic will continue on through a 100Mbps connection directly to the UH core. From the UH core, the VPN traffic will transit into the NGN network and be unencrypted at a VPN router at DOH allowing access to internal DOH and State services.

- **Analog VTC Systems** – Analog NTSC VTC systems that support up to T1 speeds will be used at most sites. Although the resolution will not be as good as the HD sites, the NTSC VTCs operating at 768 to 1 Mbps with prioritized IP capacity has been deemed to be sufficient for most children, adolescent, and adult mental health clinical services.
- **HD VTC Systems** - The multipurpose sites that support continuing medical and nursing education will be interconnected with HD VTC systems. The HD VTC systems will be used to support the range of applications where resolution is a critical requirement. For example, sites where CME is provided to health care providers or where EHR and data collection training requires the ability to display quality computer images.
- **HD Multipoint Conference Unit** - A multipoint conference unit (video teleconference bridge) is required at the UH TIPG Network Operations Center to enable the cross connection of HD video sites.
- **Internet2 Healthcare Provider Sites throughout the United States** – The UH State Telehealth Access Network, UH School of Medicine, UH School of Nursing, and units that provide services to the State and Pacific Islands region are already interconnected to the robust Internet2 connection of the University of Hawaii. For education, training, and clinical activities supported by the University of Hawaii research, training, and service units, Internet2 use is already present and authorized. As the non-University of Hawaii healthcare providers connect to the Pacific Broadband Telehealth Demonstration Project and sites become familiar with other healthcare providers connected to the Internet2, decisions will be made with respect to directly passing through



interconnections to such sites. As such, Internet2 fees are not included in Year 1 of this project; but, are included in Year 2.

## XI. Coordination Throughout State

The primary coordination for this pilot project will be provided by the University of Hawaii, the Hawaii State Department of Health, and the Advisory Committee for the Pacific Broadband Telehealth Demonstration Project. Internal coordination and support for health care providers will be provided through the Consortium Applicants. This includes the Hawaii Health Systems Corporation, the VA Pacific Islands Health Care System (VAPIHCS), Hawaii Pacific Health, and others.

Within the University of Hawaii, the TIPG and STAN will serve as a focal point for coordination activities. The STAN was established in 1999 by a partnership of the Hawaii Health Systems Corporation, the University of Hawaii, and the High Technology Development Corporation of the State of Hawaii. Sixty-five percent (65%) of the existing STAN health care providers receive RHCD support. The STAN has relied on the use of rural Healthcare funds since its inception.

## XII. Extent the network can be self-sustaining once established.

The proposed network will in large part be self-sustaining once established. This is because the network connections proposed in this application can be funded in part through the current structure of the Rural Health Care Program of the FCC. However, there are some issues that may affect sustainability. First, some urban healthcare providers that provide services to the remote and rural communities of Hawaii may be affected by the end of the pilot program, despite the fact that they serve the underserved in both urban and rural settings. Further, in Hawaii, the inclusion of the urban health care providers in the demonstration project is important not only because they also serve underserved populations; but these providers are often able to assist in responding to emergency needs in the rural communities. Unfortunately, a major obstacle for providing health services to communities located on the outer islands is that the travel between islands is costly in funding and time for the health care provider and clients.

Second, federal definitions to determine “rurality” often neglect the isolated nature of our rural island communities, which require people to fly between islands to receive services not available on-island. For example, under changing FCC definitions, the community of Hilo on the island of Hawaii will not be considered rural. Under other definitions used by federal agencies, the whole island of Hawaii is considered rural and the healthcare facilities use the rural healthcare programs for many services that are provided by specialists in these locations. As such, the applicants are hopeful that the FCC will not only grandfather the current sites, but will also allow the use of other definitions of rurality so that these healthcare providers are able to use the rural healthcare funds for connectivity. Finally, it is important to note the community health care clinics and centers were not able to be included in this grant application. Given the amount of time needed to plan and budget funds for interconnectivity,

these primary care centers often do not have the financial resources or ability to rapidly respond to a short filing window. It is hoped that the FCC will expand the time period for the broadband demonstration to enable the value of multipurpose broadband networks to become fully established.

### XIII. Summary

The Pacific Broadband Telehealth Demonstration Project provides a tremendous opportunity for a successful pilot project that will build on and leverage the critical mass of telehealth initiatives throughout the State of Hawaii and the Pacific region, and indeed the United States. The project will demonstrate the value of accessible and affordable broadband connectivity and High-Definition video teleconferencing to significantly improve teleconsultations and education and training. The project will also establish a critical infrastructure to support and expand access to the many different telehealth and telemedicine applications. The communications network infrastructure will not only support the internal electronic health record of the health care providers in the network; but, will grow to become a part of the national EHR and public health network infrastructure for Hawaii, the Pacific and the nation.

This demonstration and pilot project is aimed to assist Hawaii and the Pacific region to support and coordinate telehealth efforts within the state and region. The project includes representation from Hawaii and Pacific health care providers and research, education, and training institutions. The development of the proposal in itself was a means to bring these organizations together to share information, needs, and solutions. The FCC Pilot project is needed in our region to further advance these initiatives and improve the quality and outreach of health services in our community.

## Appendices

Appendix 1: List of Sites and RUCA Codes

Appendix 2: Project Budget

Budget Summary

Budget Details

Appendix 3: Letters of Support

Chiyomi Fuchino, MD, Director of Health, State of Hawaii

Tom Driskill, Chief Executive Officer, Hawaii Health Systems Corporation

James Hastings, MD, Director, Pacific Island Health Care System, U.S. Department of Veterans Affairs

Dale Moyan, eTelehealth Manager, Hawaii Pacific Health

Chuck Warren, Chairman, Board of Directors, American Samoa Medical Center

Neal Palafox, MD, and Lee Buenconsejo-Lum, MD, Department of Primary Care, John A. Burns, University of Hawaii School of Medicine

Stephen Haynes, Ph.D., Chairman, Department of Psychology, University of Hawaii

Ellen Raney, M.D., Chief of Staff and Miki Morris, Acting Administrator, Shriners Hospital for Children

Garret T. Yoshimi, Director, Technology Infrastructure, University of Hawaii

Ann Sakaguchi, MPH, Ph.D., Director, Emergency Management, Preparedness and Response Information Network and Training Services (Pacific EMPRINTS), University of Hawaii

Mike Wylie, Ph.D., Associate Professor and Director, Mental Health Services Research, Evaluation, and Training Program

Lydia Hemmings, Executive Director, Hawaii Psychiatric Medical Association

Appendix 4: Project Manager's Curriculum Vitae

## Appendix 1: List of Sites and RUCA Codes

Appendix 1 - List of Sites and RUCA Codes

Name/Location	Address	Coordinator Name	Telephone Number	RUCA
Lanakila Health Center	1700 Lanakila Ave., 2nd Flr. Honolulu, HI 96817 (Lanakila Health Center)	Dwight Bartolome	(808) 586-4450	1
Diamond Head Health Center	3627 Kilauea Ave, Computer Rm Honolulu, HI 96816	Dwight Bartolome	(808) 586-4450	1
Hawaii State Hospital	45-710 Keaahala Rd. Kaneohe, HI 96744 (Hawaii State Hospital)	Dwight Bartolome	(808) 586-4450	2
State Laboratory Facility	2725 Waimano Home Rd. Pearl City HI 96782	Dwight Bartolome	(808) 586-4450	1
DDD Case Mangement Office	801 Dillingham Blvd, 2nd Flr. Honolulu, HI 96817 (Dole Cannery Bldg)	Dwight Bartolome	(808) 586-4450	1
Ala Moana Health Center	591 Ala Moana, Rm 125 Honolulu, HI 96813	Dwight Bartolome	(808) 586-4450	1
Waimano DDD Service Branch	2201 Waimano Home Rd. Pearl City, HI 96782	Dwight Bartolome	(808) 586-4450	1
Kona Health Center	79-1015 Haukapila Street Kealahakua, HI 96750	Dwight Bartolome	(808) 586-4450	4
Wailuku Health Center	121 Mahalani St. Main Bldg. Wailuku, HI 96793	Dwight Bartolome	(808) 586-4450	4
Molokai Health Center	65 Makaena St. RM 107 Kaunakakai, HI 96748 (Kaunakakai Civic Center)	Dwight Bartolome	(808) 586-4450	7
Adult Mental Health Division Office	3675 Kilauea Ave. Honolulu, HI 96816 (Leahi Trotter Bldg)	Dwight Bartolome	(808) 586-4450	1
Waiakea Complex	1582 Kamehameha Ave. Hilo, HI 96720 (Environmental Health Facilities)	Dwight Bartolome	(808) 586-4450	4
Leeward Health Center	860 Fourth Ave. Pearl City, HI 96782 (Leeward Health Center)	Dwight Bartolome	(808) 586-4450	1
Windward Health Center	45-691 Keaahala Rd. Kaneohe, HI 96744 (Windward Comprehensive Health Center)	Dwight Bartolome	(808) 586-4450	2
Family Health Services Division	741A Sunset Ave Honolulu, HI 96816 (Wilcox Annex)	Dwight Bartolome	(808) 586-4450	1
Leeward Annex	870 Fourth Street Pearl City, HI 96782	Dwight Bartolome	(808) 586-4450	1
Case Management Service Branch	88 Kanoolehua Ave. Ste 102 Hilo, HI 96720 (Waiakea Kai Shopping Center)	Dwight Bartolome	(808) 586-4450	4
Hawaii County Community Mental Health Center	37 Kekaulike St. Bsmt. Hilo, HI 96720	Dwight Bartolome	(808) 586-4450	4
Hansens	3650 Maunalani Ave. Rm 210 Honolulu, HI 96816 (Sinclair Bldg)	Dwight Bartolome	(808) 586-4450	1
Waimea Health Center	67-5189 Kamamalu St. Kamuela, HI 96743 (Waimea Health Center)	Dwight Bartolome	(808) 586-4450	8
Kailua Family Guidance Center	42-477 Kalaniana'ole Hwy. Kailua, HI 96734	Dwight Bartolome	(808) 586-4450	2
Honokaa Mental Health Center	45-3380 Mamane St. Honokaa, HI 96727	Dwight Bartolome	(808) 586-4450	7
Puna Community Mental Health Center	15-2866 Government Main Rd Suite 201 Pahoa, HI 96778 (Pahoa Town Center, Bldg E)	Dwight Bartolome	(808) 586-4450	5
Kauai Community Mental Health Center	3-3212 Kuhio Highway, 1st Flr Lihue, HI 96766	Dwight Bartolome	(808) 586-4450	4
Hana Maui	5101 Uakea Rd. Hana, HI 96713	Dwight Bartolome	(808) 586-4450	10
Lanai Hospital	628 7th Ave. Lanai City, HI 96763	Dwight Bartolome	(808) 586-4450	7
Wahiawa Community Mental Health Center	910 California Ave. Ste 119 Wahiawa, HI 96786 (Wahiawa Clinic)	Dwight Bartolome	(808) 586-4450	1
Maui Family Guidance Center	270 Waiehu Beach Ste 213 Wailuku, HI 96793	Dwight Bartolome	(808) 586-4450	4
Kona Community Mental Health Center	79-1020 Haukapila Rd, Rm 203 Kealahakua, HI 96750 (Keakealani State Office Bldg.)	Dwight Bartolome	(808) 586-4450	4
Kalihi-Palama Family Guicance Center	2045 Kam IV Rd. Comp Rm. Honolulu, HI 96818	Dwight Bartolome	(808) 586-4450	1
Family Health Services Division / Early Intervention System	1350 S King St Suite 202 Honolulu, HI 96813	Dwight Bartolome	(808) 586-4450	1
HI County Community Mental Health Center	136 Kinoole Street Hilo, HI 96720 (Hi Community Health Center)	Dwight Bartolome	(808) 586-4450	4

Appendix 1 - List of Sites and RUCA Codes

Name/Location	Address	Coordinator Name	Telephone Number	RUCA
Kona Community Mental Health Center	79-1020 Haukapila Rd, Rm 203 Kealahou, HI 96750 (Kealahou State Office Bldg.)	Dwight Bartolome	(808) 586-4450	4
Kau Community Mental Health Center	219-B Kaaeniki Rd. Naalehu, HI 96772	Dwight Bartolome	(808) 586-4450	10.5
Waimea Family Guidance Center	65-1230 Mamalahoa Hwy Ste A-11 Kamuela, HI 96743 (Carter Professional Building)	Dwight Bartolome	(808) 586-4450	8
Kona District Health Office	81-980 Halekii Suite 103 Kailua-Kona, HI 96740 (Kealahou Business Plaza)	Dwight Bartolome	(808) 586-4450	4
BT CMIS DDD Office	210 Imi Kala Dr, Rm 105 Wailuku, HI 96793	Dwight Bartolome	(808) 586-4450	4
STD/Aids	3675 Kilauea Ave Honolulu, HI 96816	Dwight Bartolome	(808) 586-4450	1
STD/Aids	728 Sunset Ave Honolulu, HI 96816	Dwight Bartolome	(808) 586-4450	1
Kapaa Health Center	4491 Kou Street Kapaa, HI 96746	Dwight Bartolome	(808) 586-4450	5
Hanapepe Health Center	11-3756 Kaumualii Hwy Hanapepe, HI 96716	Dwight Bartolome	(808) 586-4450	4
Kau Health Center	95-5669 Mamalahoa Hwy Naalehu, HI (Naalehu Health Center)	Dwight Bartolome	(808) 586-4450	10.5
Kohala Health Center	54-3900 Akone Pule Hwy Kapaa, HI 96755 (N Kohala State Office Bldg)	Dwight Bartolome	(808) 586-4450	7
Honokaa Health Center	45-3380 Mamane Street Honokaa, HI 96727 (Honokaa State Office Bldg)	Dwight Bartolome	(808) 586-4450	7
Kinohiwa	1250 Punchbowl Street Honolulu, HI 96813	Dwight Bartolome	(808) 586-4450	1
Maui Memorial Medical Center	221 Mahalani Street Wailuku HI 96793	Barbara Kahana	(808) 733-4035	4
Kula Hospital	204 Kula Highway Kula, HI 96790	Barbara Kahana	(808) 733-4035	4
Lanai Community Hospital	628 Seventh Street Lanai City, HI 96763	Barbara Kahana	(808) 733-4035	7
Hilo Medical Center	1190 Waiānuenue Avenue Hilo, HI 96720	Barbara Kahana	(808) 733-4035	4
Hale Ho'ola Hamakua	45-547 Plumeria Street Honoka'a, HI 96727	Barbara Kahana	(808) 733-4035	7
Ka'u Hospital	1 Kamani Street Pahala, HI 96777	Barbara Kahana	(808) 733-4035	10.5
Hilo Bay Clinic	311 Kalaniana'ole Avenue Hilo, HI 96720	Jason Ferreira	(808) 930-0442	4
Keeau Family Health Center	16-192 Piimua Street Keeau, HI 96749	Jason Ferreira	(808) 930-0442	4
Pahoa Family Health Center	15-2868 Government Road Pahoa, HI 96778	Jason Ferreira	(808) 930-0442	5
Kau Family Health Center	95-5583 Mamalahoa Road Naalehu, HI 96772	Jason Ferreira	(808) 930-0442	10.5
Kohala Hospital	54-383 Hospital Road Kapaa, HI 96755	Barbara Kahana	(808) 733-4035	7
Kona Community Hospital	79-1019 Haukapila Street Kealahou, HI 96750	Barbara Kahana	(808) 733-4035	4
North Hawaii Community Hospital	67-1125 Mamalahoa Highway Kamuela, HI 96743	Wayne Higaki	(808) 881-4695	8
Kauai Veterans Memorial Hospital	4643 Waimea Canyon Road Waimea, HI 96796	Barbara Kahana	(808) 733-4035	7.2
Samuel Mahelona Memorial Hospital	4800 Kawaihau Road Kapaa, HI 96746	Barbara Kahana	(808) 733-4035	5
Maluhia Hospital	1027 Hala Drive Honolulu, HI 96817	Barbara Kahana	(808) 733-4035	1
Leahi Hospital	3675 Kilauea Avenue Honolulu, HI 96816	Barbara Kahana	(808) 733-4035	1
Physician Center at Mililani	95-390 Kuahelani Ave Mililani, HI 96789	Lee Buenconsejo-Lum	(808) 627-3230	1
Kuakini Health System	347 North Kuakini Street Honolulu, HI 96817	Ron Uno	(808) 547-9256	1
Hawaii Medical Center	2230 Liliha Street Honolulu, HI 96817	Allison Tai	(808) 628-1137	1
Shriners Hospital	1310 Punahou Street Honolulu, HI 96826	Jana Lindsey	(808) 951-3637	1
University of Hawaii School of Nursing & Dental Hygiene	2528 McCarthy Mall (Webster Hall) Honolulu, HI 96822	Mr. John Perez	(808) 956-5141	1
Agricultural Development in the American Pacific	3050 Maile Way Honolulu, HI 96822	Jim Hollyer	(808) 956-9539	1
University Department of Psychology	2430 Campus Road, Gartley 110 Honolulu, HI 96822	Stephen Haynes	(808) 956-8414	1

Appendix 1 - List of Sites and RUCA Codes

Name/Location	Address	Coordinator Name	Telephone Number	RUCA
University Affiliated Program (Wist Hall)	1776 University Ave. #UA4-6 Honolulu, HI 96822	Jim Skouge	(808) 956-9501	1
University of Hawaii - Telecommunications and Information Policy Group	2424 Maile Way #713 Honolulu, HI 96822	Norman Okamura	(808) 956-2909	1
University of Hawaii - Biomedical Sciences	1960 East-West Road Honolulu, HI 96822	John Kawahara	(808) 956-9473	1
Manoa Innovation Center - Mental Health	2800 Woodlawn Dr., Ste. 120 Honolulu, HI 96822	Jennifer Miyasaki	(808) 539-3721	1
Social Science Research Institute - Mental Health	2424 Maile Way Saunders 711 Honolulu, HI 96822	Paula Chun	(808) 956-5640	1
University of Hawaii Mental Health Services Research Evaluation and Training Program	45-710 Keaahala Rd. Cooke Bldg. Kaneohe, HI 96744	Alicia Oh	(808) 236-8482	1
Mental Health Transformation Department	1960 East-West Road Honolulu, HI 96822	Paula Chun	(808) 956-5640	1
Veterans Affairs Pacific Island Health Care Systems	459 Paterson Rd. Honolulu, HI 96819	Mary Cronin	(808) 433-0100	1
American Samoa Clinical Based Outpatient Clinic	American VA CBOC Pago Pago, AS 96799	Mary Cronin	(808) 433-0100	10
American Samoa Medical Center	American Samoa Medical Center Pago Pago, AS 96799	Ray Tulafono	(684) 633-4049	10
The Queen's Medical Center	1301 Punchbowl Street Honolulu, HI 96813	Mr. Louis Martin	(808) 585-5123	1
Kahuku Hospital	56-117 Pualalea St. Kahuku, HI 96731	Barbara Kahana	(808) 733-4035	2
Hawaii Pacific Health	55 Merchant Street, 26th floor Honolulu, Hawaii 96813	Dale Moyon	(808) 535-7190	1
Kaua'i Community Health Center-Waimea	4643-B Waimea Canyon Drive Waimea, Hawaii 96796	David Peters	(808) 240-0100	7.2
Kaua'i Community Health Center-Kapaa	4800-D Kawaihau Road Kapaa, HI 96746	David Peters	(808) 240-0100	5
Hui Malama Ola Na OIwi	311 Kalaniana'ole Avenue Hilo, HI 96720	Lorraine Sonoda-Fogel	(808) 961-2609	4
University of Guam	University of Guam House 6 Mangilao 96923 GU	Bruce Best	(671) 735-2620	10
Commonwealth Health Center	P.O. Box 500-409 Saipan, MP 96950-0409	Joseph Santos	(670) 234-8950	10

Department of Health Sites that are currently connected to the State NGN Backbone that will be connected to the network but do not require funding				
Name/Location	Address	Coordinator Name	Telephone Number	
Army and AirForce Exchange Services (AAFES)	919 Ala Moana Blvd Honolulu HI 96814	Dwight Bartolome	(808) 586-4450	
State Office Tower	235 Beretania Street Suite 700 Honolulu HI 96813	Dwight Bartolome	(808) 586-4450	
Executive Office of Aging	250 South Hotel Street Suite 406 Honolulu HI 96813	Dwight Bartolome	(808) 586-4450	
State Health Planning Agency	1177 Alakea Street Honolulu HI 96813	Dwight Bartolome	(808) 586-4450	
Alcohol Drug Abuse Division / Office of Care Homes	601 Kamokila Blvd Kapolei HI 96707	Dwight Bartolome	(808) 586-4450	
Public Health Nursing - Community Health	94-275 Mokuola Street Waipahu HI 96797	Dwight Bartolome	(808) 586-4450	
District Health Office - Hawaii	P O Box 916 Hilo HI 96721	Dwight Bartolome	(808) 586-4450	
District Health Office - Maui	54 High Street Wailuku HI 96793	Dwight Bartolome	(808) 586-4450	
District Health Office - Kauai	3040 UMI Street Lihue HI 96766	Dwight Bartolome	(808) 586-4450	
Disease Outbreak Control Division	1132 Bishop Street Suite 1900 Honolulu HI 96813	Dwight Bartolome	(808) 586-4450	

# Appendix 2: Project Budget



## Appendix 2A - Project Budget - Pacific Broadband Telehealth Demonstration Project

### Network Planning

Network Design, Planning, and Installation

Total Network Design Studies	FY07 (Total)	FY07 (FCC Share)	FY07 (Local Share)	FY08 (Total)	FY08 (FCC Share)	FY08 (Local Share)	Grand Total
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	\$130,000	\$	110,500	\$	19,500	\$	210,000
	\$130,000	\$	110,500.00	\$	19,500	\$	210,000

### Transmission Facilities\*

Network Nodes

Network Equipment for Small Sites

Network for Medium Sites

HD Video Teleconference Codecs

Analog Video Teleconference Codecs

\$	172,250	\$	146,413	\$	25,838	\$	172,250
\$	51,975	\$	44,179	\$	7,796	\$	63,525
\$	1,156,000	\$	982,600	\$	173,400	\$	1,589,500
\$	42,500	\$	36,125	\$	6,375	\$	42,500

Major Network Operations Centers

University of Hawaii

Multipoint Conferencing Unit

Network Equipment

\$	314,500	\$	267,325	\$	47,175	\$	314,500
\$	82,475	\$	70,104	\$	12,371	\$	82,475

Department of Health

VPN Router

\$	18,865	\$	16,035	\$	2,830	\$	18,865
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### Total Network Transmission Facilities Costs

\$	1,838,565	\$	1,562,780	\$	275,785	\$	3,782,293	\$	66,758	\$	2,283,615
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### Telecommunications Circuits\*\*, \*\*\*

Telecommunication Circuits

Installation

T1 Circuit

DS-3 Circuit

Fiber MUX

25Mbps ATM Circuit

Annual Recurring Cost

\$	17,000	\$	14,450	\$	2,550	\$	2,000	\$	1,700	\$	19,000
\$	1,000	\$	850	\$	150	\$	-	\$	-	\$	1,000
\$	1,000	\$	850	\$	150	\$	1,000	\$	850	\$	2,000
\$	1,000	\$	850	\$	150	\$	-	\$	-	\$	1,000

T1 Circuit

DS-3 Circuit

Fiber MUX

25Mbps ATM Circuit

Internet2 Fees

Internet2 Connection

\$	1,319,400	\$	1,121,490	\$	197,910	\$	1,665,000	\$	1,415,250	\$	2,984,400
\$	48,000	\$	40,800	\$	7,200	\$	48,000	\$	40,800	\$	96,000
\$	1,000	\$	-	\$	-	\$	1,500	\$	21,250	\$	25,000
\$	-	\$	-	\$	-	\$	25,000	\$	85,000	\$	100,000
\$	-	\$	-	\$	-	\$	100,000	\$	15,000	\$	100,000

### Total Network Telecommunications Circuit Costs

\$	1,389,900	\$	1,179,290	\$	208,110	\$	1,843,500	\$	1,564,850	\$	3,228,400
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### Totals

\$	3,358,465	\$	2,854,695	\$	503,770	\$	2,368,550	\$	2,013,268	\$	5,727,015
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### Notes on the Budget

\* Equipment prices are based on estimated discounts: higher discount levels are anticipated upon competitive bid.

\*\* Rural HCPs will apply for current RHCD Program discounts.

This Pilot Project does not include the costs for Rural HCP telecommunication circuits.

\*\*\* Urban HCP rates are based on the current pricing for T1s riding on a MUX DS3.

Appendix 2B - Budget Details - Year 1

Name/Location	Circuit Type	T1 / DS3 Circuit Price	T1 / DS3 Circuit Qty	T1 / DS3 Install Price	T1 / DS3 Circuit Install Total	T1 / DS3 Circuit MRC Total	Network Equipment	Network Equipment Total	Network Equipment Discounted Price	VTC Equipment	VTC Equipment Total	VTC Discounted Price	Grand Total
Lanakila Health Center	T1	\$ 400	2	\$ 250	\$ 500	\$ 800	Medium Router	\$ 7,500	\$ 5,775	HD VTC	\$ 30,000	\$ 25,500	\$ 32,575
Diamond Head Health Center	T1	\$ 400	2	\$ 250	\$ 500	\$ 800	Medium Router	\$ 7,500	\$ 5,775	HD VTC	\$ 30,000	\$ 25,500	\$ 32,575
Hawaii State Hospital	T1	\$ 400	2	\$ 250	\$ 500	\$ 800	Medium Router	\$ 7,500	\$ 5,775	HD VTC	\$ 30,000	\$ 25,500	\$ 32,575
State Laboratory Facility	T1	\$ 400	1	\$ 250	\$ 250	\$ 400	Small Router Upgrade	\$ 4,000	\$ 3,080	Analog VTC	\$ 10,000	\$ 8,500	\$ 12,230
DDD Case Management Office	T1	\$ 400	1	\$ 250	\$ 250	\$ 400	Small Router Upgrade	\$ 4,000	\$ 3,080	N/A	\$ 10,000	\$ 8,500	\$ 12,230
Ala Moana Health Center	T1	\$ 400	2	\$ 250	\$ 500	\$ 800	Small Router Upgrade	\$ 4,000	\$ 3,080	Analog VTC	\$ 10,000	\$ 8,500	\$ 12,880
Waimano DDD Service Branch	T1	\$ 400	1	\$ 250	\$ 250	\$ 400	Small Router Upgrade	\$ 4,000	\$ 3,080	N/A	\$ 10,000	\$ 8,500	\$ 12,880
Kona Health Center	T1	\$ 450	1	\$ 250	\$ 250	\$ 450	Small Router	\$ 6,500	\$ 5,005	Analog VTC	\$ 10,000	\$ 8,500	\$ 14,205
Wailuku Health Center	T1	\$ 400	2	\$ 250	\$ 500	\$ 800	Small Router Upgrade	\$ 4,000	\$ 3,080	HD VTC	\$ 30,000	\$ 25,500	\$ 29,880
Molokai Health Center	T1	\$ 800	1	\$ 250	\$ 250	\$ 800	Small Router Upgrade	\$ 4,000	\$ 3,080	HD VTC	\$ 40,000	\$ 34,000	\$ 38,130
Adult Mental Health Division Office	T1	\$ 400	1	\$ 250	\$ 250	\$ 400	Medium Router	\$ 7,500	\$ 5,775	N/A	\$ 10,000	\$ 8,500	\$ 14,925
Waiakea Complex	T1	\$ 500	1	\$ 250	\$ 250	\$ 500	Small Router	\$ 6,500	\$ 5,005	Analog VTC	\$ 10,000	\$ 8,500	\$ 14,255
Leeward Health Center	T1	\$ 400	2	\$ 250	\$ 500	\$ 800	Small Router Upgrade	\$ 4,000	\$ 3,080	HD VTC	\$ 30,000	\$ 25,500	\$ 29,880
Windward Health Center	T1	\$ 400	2	\$ 250	\$ 500	\$ 800	Small Router Upgrade	\$ 4,000	\$ 3,080	HD VTC	\$ 30,000	\$ 25,500	\$ 29,880
Family Health Services Division	T1	\$ 400	2	\$ 250	\$ 500	\$ 800	Medium Router	\$ 7,500	\$ 5,775	HD VTC	\$ 30,000	\$ 25,500	\$ 32,575
Leeward Annex	T1	\$ 400	2	\$ 250	\$ 500	\$ 800	Medium Router	\$ 7,500	\$ 5,775	N/A	\$ 10,000	\$ 8,500	\$ 15,575
Case Management Service Branch	T1	\$ 400	1	\$ 250	\$ 250	\$ 400	Small Router	\$ 6,500	\$ 5,005	N/A	\$ 10,000	\$ 8,500	\$ 14,155
Hawaii County Community Mental Health Center	T1	\$ 400	1	\$ 250	\$ 250	\$ 400	Small Router Upgrade	\$ 4,000	\$ 3,080	HD VTC	\$ 30,000	\$ 25,500	\$ 29,230
Hansens	T1	\$ 400	1	\$ 250	\$ 250	\$ 400	Small Router	\$ 6,500	\$ 5,005	N/A	\$ 10,000	\$ 8,500	\$ 14,155
Waimea Health Center	T1	\$ 400	1	\$ 250	\$ 250	\$ 400	Small Router	\$ 6,500	\$ 5,005	N/A	\$ 10,000	\$ 8,500	\$ 14,155
Kailua Family Guidance Center	T1	\$ 400	1	\$ 250	\$ 250	\$ 400	Small Router Upgrade	\$ 4,000	\$ 3,080	N/A	\$ 10,000	\$ 8,500	\$ 12,230
Honokaa Mental Health Center	T1	\$ 800	1	\$ 250	\$ 250	\$ 600	Small Router Upgrade	\$ 4,000	\$ 3,080	N/A	\$ 10,000	\$ 8,500	\$ 12,430
Puna Community Mental Health Center	T1	\$ 600	1	\$ 250	\$ 250	\$ 600	Small Router	\$ 6,500	\$ 5,005	N/A	\$ 10,000	\$ 8,500	\$ 14,555
Kaual Community Mental Health Center	T1	\$ 400	2	\$ 250	\$ 500	\$ 800	Small Router	\$ 4,000	\$ 3,080	HD VTC	\$ 30,000	\$ 25,500	\$ 29,880
Hana Maui	T1	\$ 700	1	\$ 250	\$ 250	\$ 700	Small Router	\$ 6,500	\$ 5,005	N/A	\$ -	\$ -	\$ 5,955
Lanai Hospital	T1	\$ 700	1	\$ 250	\$ 250	\$ 700	Small Router	\$ 6,500	\$ 5,005	N/A	\$ -	\$ -	\$ 5,955
Wahiawa Community Mental Health Center	T1	\$ 400	1	\$ 250	\$ 250	\$ 400	Small Router Upgrade	\$ 4,000	\$ 3,080	N/A	\$ 10,000	\$ 8,500	\$ 12,230
Maui Family Guidance Center	T1	\$ 400	1	\$ 250	\$ 250	\$ 400	Small Router Upgrade	\$ 4,000	\$ 3,080	N/A	\$ 10,000	\$ 8,500	\$ 12,230
Kona Community Mental Health Center	T1	\$ 450	1	\$ 250	\$ 250	\$ 450	Small Router Upgrade	\$ 4,000	\$ 3,080	HD VTC	\$ 30,000	\$ 25,500	\$ 29,280
Kalihi-Palama Family Guicance Center	T1	\$ 400	1	\$ 250	\$ 250	\$ 400	Small Router Upgrade	\$ 4,000	\$ 3,080	N/A	\$ 10,000	\$ 8,500	\$ 12,230
Family Health Services Division / Early Intervention System	T1	\$ 400	1	\$ 250	\$ 250	\$ 400	Medium Router	\$ 7,500	\$ 5,775	N/A	\$ 10,000	\$ 8,500	\$ 14,925
HI County Community Mental Health Center	T1	\$ 600	1	\$ 250	\$ 250	\$ 600	Small Router Upgrade	\$ 4,000	\$ 3,080	HD VTC	\$ 30,000	\$ 25,500	\$ 29,430
Kona Community Mental Health Center	T1	\$ 450	2	\$ 250	\$ 500	\$ 900	Small Router Upgrade	\$ 4,000	\$ 3,080	HD VTC	\$ 30,000	\$ 25,500	\$ 29,980
Kau Community Mental Health Center	T1	\$ 1,000	1	\$ 250	\$ 250	\$ 1,000	Small Router	\$ 6,500	\$ 5,005	N/A	\$ -	\$ -	\$ 6,255
Waimea Family Guidance Center	T1	\$ 450	1	\$ 250	\$ 250	\$ 450	Small Router Upgrade	\$ 4,000	\$ 3,080	N/A	\$ 10,000	\$ 8,500	\$ 12,280
Kona District Health Office	T1	\$ 400	1	\$ 250	\$ 250	\$ 400	Small Router Upgrade	\$ 4,000	\$ 3,080	N/A	\$ 10,000	\$ 8,500	\$ 12,230
BT CMIS DDD Office	T1	\$ 400	1	\$ 250	\$ 250	\$ 400	Small Router Upgrade	\$ 4,000	\$ 3,080	N/A	\$ 10,000	\$ 8,500	\$ 12,230
STD/Aids	T1	\$ 400	1	\$ 250	\$ 250	\$ 400	Medium Router	\$ 7,500	\$ 5,775	N/A	\$ 10,000	\$ 8,500	\$ 14,925
STD/Aids	T1	\$ 400	1	\$ 250	\$ 250	\$ 400	Small Router	\$ 6,500	\$ 5,005	N/A	\$ -	\$ -	\$ 5,655
Kapaa Health Center	T1	\$ 400	1	\$ 250	\$ 250	\$ 400	Small Router	\$ 6,500	\$ 5,005	N/A	\$ -	\$ -	\$ 5,655
Hanapepe Health Center	T1	\$ 500	0	\$ 250	\$ -	\$ -	Small Router	\$ -	\$ -	N/A	\$ -	\$ -	\$ -
Kau Health Center	T1	\$ 1,000	1	\$ 250	\$ 250	\$ 1,000	Small Router	\$ 6,500	\$ 5,005	N/A	\$ -	\$ -	\$ 6,255
Kohala Health Center	T1	\$ 500	0	\$ 250	\$ -	\$ -	Small Router	\$ -	\$ -	N/A	\$ -	\$ -	\$ -
Honokaa Health Center	T1	\$ 600	1	\$ 250	\$ 250	\$ 600	Small Router	\$ 6,500	\$ 5,005	N/A	\$ -	\$ -	\$ 5,855
Kinaiu Hale	N/A	\$ -	0	\$ 250	\$ -	\$ -	VPN Router	\$ 24,500	\$ 18,865	N/A	\$ -	\$ -	\$ 18,865
Maui Memorial Medical Center	N/A	\$ -	0	\$ 250	\$ -	\$ -	N/A	\$ -	\$ -	HD VTC	\$ 30,000	\$ 25,500	\$ 25,500
Kula Hospital	N/A	\$ -	0	\$ 250	\$ -	\$ -	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ -
Lanai Community Hospital	N/A	\$ -	0	\$ 250	\$ -	\$ -	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ -
Hilo Medical Center	N/A	\$ -	0	\$ 250	\$ -	\$ -	N/A	\$ -	\$ -	HD VTC	\$ 30,000	\$ 25,500	\$ 25,500
Hale Ho'ola Hamakua	N/A	\$ -	0	\$ 250	\$ -	\$ -	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ -
Ka'u Hospital	N/A	\$ -	0	\$ 250	\$ -	\$ -	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ -

Appendix 2B - Budget Details - Year 1

Name/Location	Circuit Type	T1 / DS3 Circuit Price	T1 / DS3 Circuit Qty	T1 / DS3 Install Price	T1 / DS3 Circuit Install Total	T1 / DS3 Circuit MRC Total	Network Equipment	Network Equipment Total	Network Equipment Discounted Price	VTC Equipment	VTC Equipment Total	VTC Discounted Price	Grand Total
Hilo Bay Clinic	N/A	\$ -	0	\$ 250	\$ -	\$ -	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ -
Keeau Family Health Center	N/A	\$ -	0	\$ 250	\$ -	\$ -	N/A	\$ -	\$ -	HD VTC	\$ 30,000	\$ 25,500	\$ 25,500
Pahoa Family Health Center	N/A	\$ -	0	\$ 250	\$ -	\$ -	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ -
Kau Family Health Center	N/A	\$ -	0	\$ 250	\$ -	\$ -	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ -
Kohala Hospital	N/A	\$ -	0	\$ 250	\$ -	\$ -	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ -
Kona Community Hospital	N/A	\$ -	0	\$ 250	\$ -	\$ -	N/A	\$ -	\$ -	HD VTC	\$ 30,000	\$ 25,500	\$ 25,500
North Hawaii Community Hospital	N/A	\$ -	0	\$ 250	\$ -	\$ -	N/A	\$ -	\$ -	HD VTC	\$ 30,000	\$ 25,500	\$ 25,500
Kauai Veterans Memorial Hospital	N/A	\$ -	0	\$ 250	\$ -	\$ -	N/A	\$ -	\$ -	HD VTC	\$ 30,000	\$ 25,500	\$ 25,500
Samuel Mahelona Memorial Hospital	N/A	\$ -	0	\$ 250	\$ -	\$ -	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ -
Maluhia Hospital	T1	\$ 400	1	\$ 250	\$ 250	\$ 400	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 650
Leahi Hospital	Eth	\$ 1,500	1	\$ 250	\$ 250	\$ 1,500	N/A	\$ -	\$ -	HD VTC	\$ 30,000	\$ 25,500	\$ 27,250
Physician Center at Mililani	T1	\$ 400	1	\$ 250	\$ 250	\$ 400	N/A	\$ -	\$ -	HD VTC	\$ 30,000	\$ 25,500	\$ 26,150
Kuakini Health System	T1	\$ 400	1	\$ 250	\$ 250	\$ 400	N/A	\$ -	\$ -	HD VTC	\$ 30,000	\$ 25,500	\$ 26,150
Hawaii Medical Center	T1	\$ 400	1	\$ 250	\$ 250	\$ 400	N/A	\$ -	\$ -	HD VTC	\$ 30,000	\$ 25,500	\$ 26,150
Shriners Hospital	T1	\$ 400	1	\$ 250	\$ 250	\$ 400	N/A	\$ -	\$ -	HD VTC	\$ 30,000	\$ 25,500	\$ 26,150
University of Hawaii School of Nursing & Dental Hygiene	Eth	\$ -	0	\$ 250	\$ -	\$ -	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ -
Agricultural Development in the American Pacific	Eth	\$ -	0	\$ 250	\$ -	\$ -	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ -
University Department of Psychology	Eth	\$ -	0	\$ 250	\$ -	\$ -	N/A	\$ -	\$ -	HD VTC	\$ 30,000	\$ 25,500	\$ 25,500
University Affiliated Program (Wist Hall)	Eth	\$ -	0	\$ 250	\$ -	\$ -	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ -
University of Hawaii - Telecommunications and Information Policy Group	DS3	\$ 2,000	2	\$ 500	\$ 1,000	\$ 4,000	Core Router / Core Switch / HD MCU	\$ 454,500	\$ 386,325	HD VTC	\$ 60,000	\$ 51,000	\$ 442,325
University of Hawaii - Biomedical Sciences	Eth	\$ -	0	\$ 250	\$ -	\$ -	N/A	\$ -	\$ -	HD VTC	\$ 120,000	\$ 102,000	\$ 102,000
Manoa Innovation Center - Mental Health	T1	\$ 400	1	\$ 250	\$ 250	\$ 400	N/A	\$ -	\$ -	HD VTC	\$ 30,000	\$ 25,500	\$ 26,150
Social Science Research Institute - Mental Health	Eth	\$ -	0	\$ 250	\$ -	\$ -	N/A	\$ -	\$ -	HD VTC	\$ 30,000	\$ 25,500	\$ 25,500
University of Hawaii Mental Health Services Research Evaluation and Training Program	T1	\$ 400	1	\$ 250	\$ 250	\$ 400	N/A	\$ -	\$ -	HD VTC	\$ 30,000	\$ 25,500	\$ 26,150
Mental Health Transformation Department	Eth	\$ -	0	\$ 250	\$ -	\$ -	N/A	\$ -	\$ -	HD VTC	\$ 30,000	\$ 25,500	\$ 25,500
Veterans Affairs Pacific Island Health Care Systems	T1	\$ 400	1	\$ 250	\$ 250	\$ 400	N/A	\$ -	\$ -	HD VTC	\$ 30,000	\$ 25,500	\$ 26,150
American Samoa Clinical Based Outpatient Clinic	T1	\$ 40,000	1	\$ 250	\$ 250	\$ 40,000	Small Router	\$ 6,500	\$ 5,005	Analog VTC	\$ 10,000	\$ 8,500	\$ 53,755
American Samoa Medical Center	T1	\$ 40,000	1	\$ 250	\$ 250	\$ 40,000	Medium Router	\$ 7,500	\$ 5,775	HD VTC	\$ 30,000	\$ 25,500	\$ 71,525
The Queen's Medical Center	T1	\$ 400	1	\$ 250	\$ 250	\$ 400	N/A	\$ -	\$ -	HD VTC	\$ 90,000	\$ 76,500	\$ 77,150
Kahuku Hospital	T1	\$ 400	1	\$ 250	\$ 250	\$ 400	Small Router	\$ 6,500	\$ 5,005	HD VTC	\$ 30,000	\$ 25,500	\$ 31,155
Hawaii Pacific Health	ATM	\$ 1,500	1	\$ 1,000	\$ 1,000	\$ 1,500	N/A	\$ -	\$ -	HD VTC	\$ 30,000	\$ 25,500	\$ 28,000
Kaua'i Community Health Center-Waimea	T1	\$ 400	1	\$ 250	\$ 250	\$ 400	Small Router	\$ 6,500	\$ 5,005	HD VTC	\$ 30,000	\$ 25,500	\$ 31,155
Kaua'i Community Health Center-Kapaa	T1	\$ 400	1	\$ 250	\$ 250	\$ 400	Small Router	\$ 6,500	\$ 5,005	HD VTC	\$ 30,000	\$ 25,500	\$ 31,155
Hui Malanala Ola Na Olwi	T1	\$ 400	1	\$ 250	\$ 250	\$ 400	Small Router	\$ 6,500	\$ 5,005	HD VTC	\$ 30,000	\$ 25,500	\$ 31,155
University of Guam	N/A	\$ -	0	\$ 250	\$ -	\$ -	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ -
Commonwealth Health Center	N/A	\$ -	0	\$ 250	\$ -	\$ -	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ -
<b>TOTALS</b>		<b>\$ 111,500</b>	<b>\$ 22,750</b>	<b>\$ 19,250</b>	<b>\$ 116,950</b>	<b>\$ 747,500</b>	<b>\$ 611,935</b>	<b>\$ 1,590,000</b>	<b>\$ 1,351,500</b>	<b>\$ 2,099,635</b>			

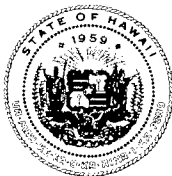
Appendix 2C - Budget Details - Year 2

Name/Location	Circuit Type	T1 / DS3 Circuit Price	T1 / DS3 Circuit Qty	T1 / DS3 Install Price	T1 / DS3 Circuit Install Total	T1 / DS3 Circuit MRC Total	Network Equipment	Network Equipment Total	Network Equipment Discounted Price	VTC Equipment	VTC Equipment Total	VTC Discounted Price	Grand Total
Lanakila Health Center	T1	\$ 400	2	\$ -	\$ -	\$ 800	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 800
Diamond Head Health Center	T1	\$ 400	2	\$ -	\$ -	\$ 800	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 800
Hawaii State Hospital	T1	\$ 400	2	\$ -	\$ -	\$ 800	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 800
State Laboratory Facility	T1	\$ 400	1	\$ -	\$ -	\$ 400	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 400
DDD Case Management Office	T1	\$ 400	1	\$ -	\$ -	\$ 400	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 400
Ala Moana Health Center	T1	\$ 400	2	\$ -	\$ -	\$ 800	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 800
Waimano DDD Service Branch	T1	\$ 400	1	\$ -	\$ -	\$ 400	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 400
Kona Health Center	T1	\$ 450	1	\$ -	\$ -	\$ 450	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 450
Wailuku Health Center	T1	\$ 400	2	\$ -	\$ -	\$ 800	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 800
Molokai Health Center	T1	\$ 800	1	\$ -	\$ -	\$ 800	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 800
Adult Mental Health Division Office	T1	\$ 400	1	\$ -	\$ -	\$ 400	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 400
Waiakea Complex	T1	\$ 500	1	\$ -	\$ -	\$ 500	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 500
Leeward Health Center	T1	\$ 400	2	\$ -	\$ -	\$ 800	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 800
Windward Health Center	T1	\$ 400	2	\$ -	\$ -	\$ 800	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 800
Family Health Services Division	T1	\$ 400	2	\$ -	\$ -	\$ 800	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 800
Leeward Annex	T1	\$ 400	2	\$ -	\$ -	\$ 800	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 800
Case Management Service Branch	T1	\$ 400	1	\$ -	\$ -	\$ 400	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 400
Hawaii County Community Mental Health Center	T1	\$ 400	1	\$ -	\$ -	\$ 400	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 400
Hansens	T1	\$ 400	1	\$ -	\$ -	\$ 400	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 400
Waimea Health Center	T1	\$ 400	1	\$ -	\$ -	\$ 400	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 400
Kailua Family Guidance Center	T1	\$ 400	1	\$ -	\$ -	\$ 400	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 400
Honokaa Mental Health Center	T1	\$ 600	1	\$ -	\$ -	\$ 600	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 600
Puna Community Mental Health Center	T1	\$ 800	1	\$ -	\$ -	\$ 800	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 800
Kaui Community Mental Health Center	T1	\$ 400	2	\$ -	\$ -	\$ 800	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 800
Hana Maui	T1	\$ 700	1	\$ -	\$ -	\$ 700	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 700
Lanai Hospital	T1	\$ 700	1	\$ -	\$ -	\$ 700	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 700
Wahiawa Community Mental Health Center	T1	\$ 400	1	\$ -	\$ -	\$ 400	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 400
Maui Family Guidance Center	T1	\$ 400	1	\$ -	\$ -	\$ 400	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 400
Kona Community Mental Health Center	T1	\$ 450	1	\$ -	\$ -	\$ 450	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 450
Kalihi-Palana Family Guidance Center	T1	\$ 400	1	\$ -	\$ -	\$ 400	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 400
Family Health Services Division / Early Intervention	T1	\$ 400	1	\$ -	\$ -	\$ 400	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 400
HI County Community Mental Health Center	T1	\$ 600	1	\$ -	\$ -	\$ 600	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 600
Kona Community Mental Health Center	T1	\$ 450	2	\$ -	\$ -	\$ 900	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 900
Kau Community Mental Health Center	T1	\$ 1,000	1	\$ -	\$ -	\$ 1,000	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 1,000
Waimea Family Guidance Center	T1	\$ 450	1	\$ -	\$ -	\$ 450	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 450
Kona District Health Office	T1	\$ 400	1	\$ -	\$ -	\$ 400	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 400
BT CMIS DDD Office	T1	\$ 400	1	\$ -	\$ -	\$ 400	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 400
STD/Aids	T1	\$ 400	1	\$ -	\$ -	\$ 400	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 400
STD/Aids	T1	\$ 400	1	\$ -	\$ -	\$ 400	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 400
Kapaa Health Center	T1	\$ 400	1	\$ -	\$ -	\$ 400	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 400
Hanapepe Health Center	T1	\$ 500	0	\$ -	\$ -	\$ -	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ -
Kau Health Center	T1	\$ 1,000	1	\$ -	\$ -	\$ 1,000	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 1,000
Kohala Health Center	T1	\$ 500	0	\$ -	\$ -	\$ -	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ -
Honokaa Health Center	T1	\$ 600	1	\$ -	\$ -	\$ 600	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 600
Kinohiwa	N/A	\$ -	0	\$ -	\$ -	\$ -	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ -
Maui Memorial Medical Center	N/A	\$ -	0	\$ -	\$ -	\$ -	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ -
Kula Hospital	N/A	\$ -	0	\$ -	\$ -	\$ -	N/A	\$ -	\$ -	HD VTC	\$ 30,000	\$ 25,500	\$ 25,500
Lanai Community Hospital	N/A	\$ -	0	\$ -	\$ -	\$ -	N/A	\$ -	\$ -	HD VTC	\$ 30,000	\$ 25,500	\$ 25,500
Hilo Medical Center	N/A	\$ -	0	\$ -	\$ -	\$ -	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ -

Appendix 2C - Budget Details - Year 2

Name/Location	Circuit Type	T1 / DS3 Circuit Price	T1 / DS3 Circuit Qty	T1 / DS3 Install Price	T1 / DS3 Circuit Install Total	T1 / DS3 Circuit MRC Total	Network Equipment	Network Equipment Total	Network Equipment Discounted Price	VTC Equipment	VTC Equipment Total	VTC Discounted Price	Grand Total
Hale Ho'ola Hamakua	N/A	\$ -	0	\$ -	\$ -	\$ -	N/A	\$ -	\$ -	HD VTC	\$ 30,000	\$ 25,500	\$ 25,500
Ka'u Hospital	N/A	\$ -	0	\$ -	\$ -	\$ -	N/A	\$ -	\$ -	HD VTC	\$ 30,000	\$ 25,500	\$ 25,500
Hilo Bay Clinic	N/A	\$ -	0	\$ -	\$ -	\$ -	N/A	\$ -	\$ -	HD VTC	\$ 30,000	\$ 25,500	\$ 25,500
Keeau Family Health Center	N/A	\$ -	0	\$ -	\$ -	\$ -	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ -
Pahoa Family Health Center	N/A	\$ -	0	\$ -	\$ -	\$ -	N/A	\$ -	\$ -	HD VTC	\$ 30,000	\$ 25,500	\$ 25,500
Kau Family Health Center	N/A	\$ -	0	\$ -	\$ -	\$ -	N/A	\$ -	\$ -	HD VTC	\$ 30,000	\$ 25,500	\$ 25,500
Kohala Hospital	N/A	\$ -	0	\$ -	\$ -	\$ -	N/A	\$ -	\$ -	HD VTC	\$ 30,000	\$ 25,500	\$ 25,500
Kona Community Hospital	N/A	\$ -	0	\$ -	\$ -	\$ -	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ -
North Hawaii Community Hospital	N/A	\$ -	0	\$ -	\$ -	\$ -	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ -
Kauai Veterans Memorial Hospital	N/A	\$ -	0	\$ -	\$ -	\$ -	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ -
Samuel Mahelona Memorial Hospital	N/A	\$ -	0	\$ -	\$ -	\$ -	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ -
Maluhia Hospital	T1	\$ 400	1	\$ -	\$ -	\$ 400	N/A	\$ -	\$ -	HD VTC	\$ 30,000	\$ 25,500	\$ 25,900
Leahi Hospital	Eth	\$ 1,500	1	\$ -	\$ -	\$ 1,500	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 1,500
Physician Center at Milliani	T1	\$ 400	1	\$ -	\$ -	\$ 400	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 400
Kuakini Health System	T1	\$ 400	1	\$ -	\$ -	\$ 400	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 400
Hawaii Medical Center	T1	\$ 400	1	\$ -	\$ -	\$ 400	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 400
Shriners Hospital	T1	\$ 400	1	\$ -	\$ -	\$ 400	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 400
University of Hawaii School of Nursing & Eth	Eth	\$ -	0	\$ -	\$ -	\$ -	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ -
Agricultural Development in the American	Eth	\$ -	0	\$ -	\$ -	\$ -	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ -
University Department of Psychology	Eth	\$ -	0	\$ -	\$ -	\$ -	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ -
University Affiliated Program (Wist Hall)	Eth	\$ -	0	\$ -	\$ -	\$ -	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ -
University of Hawaii - Telecommunications	DS3	\$ 2,000	2	\$ -	\$ -	\$ 4,000	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 4,000
University of Hawaii - Biomedical Sciences	Eth	\$ -	0	\$ -	\$ -	\$ -	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ -
Manoa Innovation Center - Mental Health	T1	\$ 400	1	\$ -	\$ -	\$ 400	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 400
Social Science Research Institute - Mental	Eth	\$ -	0	\$ -	\$ -	\$ -	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ -
University of Hawaii Mental Health Service	T1	\$ 400	1	\$ -	\$ -	\$ 400	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 400
Mental Health Transformation Department	Eth	\$ -	0	\$ -	\$ -	\$ -	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ -
Veterans Affairs Pacific Island Health Care	T1	\$ 400	1	\$ -	\$ -	\$ 400	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 400
American Samoa Clinical Based Outpatient	T1	\$ 480,000	1	\$ -	\$ -	\$ 40,000	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 40,000
American Samoa Medical Center	T1	\$ 480,000	1	\$ -	\$ -	\$ 40,000	N/A	\$ -	\$ -	HD VTC	\$ 60,000	\$ 51,000	\$ 91,000
The Queen's Medical Center	T1	\$ 400	1	\$ -	\$ -	\$ 400	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 400
Kahuku Hospital	T1	\$ 400	1	\$ -	\$ -	\$ 400	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 400
Hawaii Pacific Health	ATM	\$ 1,500	1	\$ -	\$ -	\$ 1,500	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 1,500
Kaua'i Community Health Center-Waimea	ATM	\$ 1,500	1	\$ -	\$ -	\$ 1,500	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 1,500
Kaua'i Community Health Center-Kapaa	ATM	\$ 1,500	1	\$ -	\$ -	\$ 1,500	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 1,500
Hui Malama Ola Na OIwi	ATM	\$ 1,500	1	\$ -	\$ -	\$ 1,500	N/A	\$ -	\$ -	N/A	\$ -	\$ -	\$ 1,500
University of Guam	T1	\$ 120,000	1	\$ 1,000	\$ 1,000	\$ 10,000	Medium Router	\$ 7,500	\$ 5,775	HD VTC	\$ 90,000	\$ 76,500	\$ 93,275
Commonwealth Health Center	T1	\$ 240,000	1	\$ 1,000	\$ 1,000	\$ 20,000	Medium Router	\$ 7,500	\$ 5,775	HD VTC	\$ 90,000	\$ 76,500	\$ 103,275
<b>TOTALS</b>		<b>\$1,354,800</b>	<b>\$</b>	<b>2,000</b>	<b>\$ 2,000</b>	<b>\$ 150,250</b>		<b>\$ 15,000</b>	<b>\$ 11,550</b>		<b>\$ 510,000</b>	<b>\$ 433,500</b>	<b>\$ 597,300</b>

## Appendix 3: Letters of Support



**STATE OF HAWAII  
DEPARTMENT OF HEALTH**

P.O. BOX 3378  
HONOLULU, HAWAII 96801-3378

In reply, please refer to:  
File:

May 4, 2007

The Federal Communications Commission (FCC)  
9300 East Hampton Drive  
Capital Heights MD, 20743

Subject: WC Docket No. 02-60 – Pacific Broadband Telehealth Demonstration Project

To FCC Commissioners:

The Hawaii State Department of Health fully endorses the Pacific Broadband Telehealth Demonstration Project (PBTD) application submitted to the Federal Communications Commission (FCC) on our behalf by the University of Hawaii Telecommunications and Information Policy Group (UH TIPG). This FCC project provides us an opportunity to develop an advanced broadband telecommunication infrastructure to assist in achieving our goal for equitable access to affordable and quality health care. The project aims to establish a comprehensive State and Pacific region telehealth network utilizing the cross connection of existing networks and including health care facilities that currently do not have access to a broadband infrastructure.

The development and implementation of this project is inclusive of several Hawaii State Department of Health divisions and offices. The State Office of Rural Health is a strong advocate for improved health information technology and telecommunications as both provide increased healthcare access and quality for our underserved communities. The State Office of Rural Health is working closely with the UH TIPG on an electronic health records demonstration project and provided assistance with this application and will provide continued assistance in implementing this project in the rural communities of Hawaii. The Health Information Systems Office (HISO) is committed to working with the UH TIPG in the overall network design and implementation. The Office of Planning, Policy and Program Development is assisting with the coordination of other divisions of the Department of Health. The Primary Care Office is coordinating with the Federally Qualified Health Clinics. The District Health Offices on the neighbor islands of Hawaii, Maui and Kauai are designated as new network nodes that will be made available for multipurpose applications. These offices provide coordination, administrative support and are engaged with community organization, planning and consensus building.

Currently many sites within the Hawaii State Department of Health are not afforded with broadband network connectivity, limiting the telehealth applications to those that can be adequately delivered using lower resolution analog video conferencing. We look forward to

the improved quality of service for consultations and continuing medical education programs that can be provided through the new High Definition video system.

We are at varying stages of readiness for the implementation of advanced telehealth applications. The Health Resources Administration Genetics program, for example, has established a collaborative partnership with the Kapiolani Medical Center, Queen's Medical Center and the University of Hawaii John A. Burns School of Medicine for pediatric and adult genetic counseling using both face-to-face and video teleconferencing. The Behavioral Health Administration's Adult Mental Health Division and Child and Adolescent Mental Health Division are both in the initial stages of implementing telehealth applications that will provide cost savings in time and resources; however, a reliable and robust telecommunication infrastructure is necessary to support these initiatives. The FCC Pilot Project is the means for us to meet some of these needs.

The Hawaii State Department of Health will fully participate in the management structure of the network by participating in the Advisory Committees. We will have representation on the Telehealth Applications Committee and the Technical Network Committee.

Financially, the Hawaii State Department of Health commits to the contribution of matching funds. Our initial analysis of the project will enable part of our current telecommunications budget to be reallocated for this project, however with the anticipated 85% discount we expect that the network services and capacity will be significantly increased. The PBTDC consortium will also seek additional funding to meet the 15% local match.

The State of Hawaii and Pacific Region provides a tremendous opportunity for a successful demonstration project that will build on the critical mass of health care facilities in the state. Many of these health care providers have participated in the Hawaii State Telehealth Access Network since 1999 (of which 65% are funded by the current RHCD program). The FCC Pilot project is needed in our region to further advance these initiatives and improve the quality and outreach of health services in our community.

Sincerely,

A handwritten signature in black ink, appearing to read 'Chiyome Leinaala Fukino', written in a cursive style.

Chiyome Leinaala Fukino, M.D.  
Director of Health





**HAWAII HEALTH SYSTEMS**  
C O R P O R A T I O N

*"Touching Lives Everyday"*

May 4, 2007

Federal Communication Commission  
9300 East Hampton Drive  
Capital Heights  
MD, 20743

Dear FCC Commissioners:

The Hawaii Health Systems Corporation (HHSC) strongly endorses the application submitted by the University of Hawaii Telecommunications and Information Policy Group (TIPG) to the Federal Communication Commission (FCC) in response to the FCC's announcement of a Pilot Program "For the Enhanced Access to Advanced Telecommunications and Information Services", WC Docket No. 02-60.

HHSC's mission is to provide quality healthcare, particularly in rural areas throughout Hawaii. As a managing partner of the State of Hawaii Access Network (STAN), HHSC is provided cost-effective communications link for services to remote locations. If the grant application is funded, HHSC would have the ability to communicate with additional health care providers, both within our State and the Region. This would greatly improve HHSC's ability to share valuable physician and healthcare resources to remote locations throughout Hawaii and the Pacific Islands. The need for improved, cost-effective, and technologically advanced telecommunication and information services continues to grow, and HHSC is in need of these services.

The HHSC will contribute to the management structure of the network by participating in the Advisory Committees. HHSC will volunteer to sit on the Telehealth Applications Committee and the Technical Network Committee which will guide the future growth of the network in programs, services and related technical issues. In addition, HHSC will also work toward seeking additional funding to meet the 15% local match.

To date this FCC pilot project has benefited the State and Pacific region ability to come together to strategically plan for integrated telehealth programs and services. The project includes representation from educational institutions, health care providers and the State of Hawaii Department of Health. The development of the proposal in itself was a means to bring these parties together to share information, needs and solutions.

I offer my unresolved endorsement of the Hawaii and Pacific Region proposal and look forward to your continued support of this Program. The work and much needed services delivered through the STAN network are greatly appreciated in the region, and we anticipate a continued partnership and long-term commitment.

Sincerely,

Thomas M. Driskill, Jr.  
President and Chief Executive Officer  
Hawaii Health Systems Corporation

3675 KILAUEA AVENUE • HONOLULU, HAWAII 96816 • PHONE: (808) 733-4020 • FAX: (808) 733-4028

HILO • HONOKAA • KAU • KONA • KOHALA • WAIMEA • KAPAA • WAILUKU • KULA • LANAI • HONOLULU



DEPARTMENT OF VETERANS AFFAIRS  
PACIFIC ISLANDS HEALTH CARE SYSTEM  
Spark M. Matsunaga Medical Center  
459 Patterson Road  
Honolulu HI 96819-1522

MAY 4 2007

In Reply Refer  
459/00

Federal Communication Commission  
9300 East Hampton Drive  
Capital Heights  
MD, 20743

Subject: WC Docket No. 02-60 – Pacific Broadband Telehealth Demonstration Project

Dear FCC Commissioners:

The Veterans Affairs Pacific Islands Health Care System (VAPIHCS) fully endorses the application submitted by the University of Hawaii Telecommunications and Information Policy Group (TIPG) on behalf of the Pacific Broadband Telehealth Demonstration Project Consortium. The proposal is submitted to the Federal Communication Commission (FCC) for the funding of a Pilot Program that would give health care providers enhanced access to advanced telecommunications and information services and provides a base for electronic health record data interchange.

The VA Pacific Islands Health Care System serves veterans in the Pacific Basin. VAPIHCS works collaboratively with the University of Hawaii and the Tripler Army Medical Center (TAMC) for providing diagnostic, medical, mental health, and specialty care and treatment. Care is provided from its main medical center on Oahu, through four community based outpatient clinics (CBOCs) in the Hawaiian Islands, and a CBOC in Guam. A new VA CBOC in American Samoa is scheduled for opening in July 2007.

As the first VA network in the nation to benefit from the Rural Health Care Program, we understand and fully appreciate the potential of this FCC Pilot Project. The VAPIHCS is seeking a link from the soon to open CBOC in American Samoa, a link to the UH STAN, and proposed network equipment. Through the Pacific Broadband Telehealth Demonstration Project, we anticipate connectivity to our new health care facility in American Samoa that will improve the level of care and together with the UH TIPG, we are planning virtual private network (VPN) connections to ensure secure cross connectivity to the hospitals and clinics that provide services to our veterans. The telehealth network enables us to provide VA teleconsultation, continuing medical education and training and will also support our VistA electronic health record system.

The planning and development of the Pacific Broadband Telehealth Demonstration Project for the FCC Pilot has greatly assisted in the coordination between the institutes of higher education, health care providers and the departments of health in Hawaii and the Pacific Islands. An integrated and seamless network will provide a foundation to further our collaborative efforts. We fully endorse the proposal and look forward to the continuation of this program.

Sincerely,

James E. Hastings, M.D., FACP  
Director, VA Pacific Islands Health Care System

# Hawaii Pacific Health

55 Merchant Street • Honolulu, Hawaii 96813 • hawaiiapacifichealth.org

May 2, 2007

The Federal Communication Commission  
9300 East Hampton Drive  
Capital Heights, MD. 20743

Dear FCC Commissioners:

On behalf of the Hawaii Pacific Health (HPH), I write this letter of support to fully endorse the application submitted by the University of Hawaii Telecommunications and Information Policy Group (TIPG) to the Federal Communication Commission (FCC) in response to the FCC's announcement of a Pilot Program "For the Enhanced Access to Advanced Telecommunications and Information Services", WC Docket No. 02-60.

HPH is a non-profit healthcare organization formed with the merger of Kapi'olani Medical Center for Women & Children, Kapi'olani Medical Center at Pali Momi, Straub Clinic & Hospital, Wilcox Memorial Hospital and Kauai Medical Clinic. The HPH non-profit integrated healthcare system is the state's largest healthcare provider and is committed to improving the health and well-being of the people of Hawaii and the Pacific Region through its four hospitals, 18 outpatient centers and a team of 1,100 physicians on the islands of Oahu, Kauai and Lanai. HPH maintains a Telehealth network consisting of 51 real time video conferencing systems and a multipoint video conferencing bridge for connectivity to ISDN sites outside the HPH Telehealth network. Non HPH sites that are part of this Telehealth network include several Hawaii State Hospitals; as well as North Hawaii Community Hospital in Waimea, Hawaii Radiology Associates in Kona, and Hilo on the Island of Hawaii; and Molokai General Hospital on the Island of Molokai. The high quality health care and services are possible through these collaborative efforts of these clinics and other healthcare organizations.

Through a previous grant from the National Telecommunications and Information Administration (NTIA) in 1999, HPH received support to install and provide specialized Tandberg units that can be used for Fetal Ultrasound for high risk pregnancies. The need for this service is great because there is only one group of perinatologists in Hawaii that provide such services. Since the completion of the NTIA Grant, this initial service has been expanded to Pediatric Specialty Services, Pediatric Cardiology, and Neonatal Intensive Care access, and TeleSurgery as well as Medical Education events. Telehealth is a long term, fully operationalized department within HPH.

KAPI'OLANI  
MEDICAL CENTER  
AT PALI MOMI



KAPI'OLANI  
MEDICAL CENTER  
FOR WOMEN & CHILDREN



**Straub**  
CLINIC & HOSPITAL



*Wilcox Health*

# Hawaii Pacific Health

55 Merchant Street • Honolulu, Hawaii 96813 • [hawaiipacifichealth.org](http://hawaiipacifichealth.org)

HPH will provide qualified personnel to participate in the management structure of the project that includes a Telehealth Applications Committee and a Technical Network Committee to ensure that technical problems and/or issues that arise are dealt with.

The establishment of this project would provide the continuation of our services and enable wider outreach for remote sites to participate in consultations with specialists, specifically to the Pacific, other non HPH locations in Hawaii, and other IP / Internet based sites that do not have ISDN connectivity. HPH recognizes the needs for specialty health care that may be met through telehealth applications. The collaboration among the many partners that the planning of this Pacific Broadband Telehealth Demonstration Project has already established, together with an affordable broadband infrastructure will certainly provide much needed, improved and coordinated health services to Hawaii and the Pacific region.

Hawaii Pacific Health strongly supports the proposal put forth by the Hawaii and Pacific Region consortium and will participate fully in the network cross connections and delivery of services.

Sincerely,



Dale E. Moyen  
eTelehealth Manager

KAPI'OLANI  
MEDICAL CENTER  
AT PALI MOMI



KAPI'OLANI  
MEDICAL CENTER  
FOR WOMEN & CHILDREN



**Straub**  
CLINIC & HOSPITAL



*Wilcox Health*





# LBJ Tropical Medical Center

P.O. Box LBJ  
Pago Pago, American Samoa 96799



**Friday, May 04, 2007**

**Federal Communication Commission  
9300 East Hampton Drive  
Capital Heights  
MD, 20743**

**Subject: WC Docket No. 02-60 – Pacific Broadband Telehealth Demonstration Project**

Dear FCC Commissioners:

The American Samoa Medical Center (ASMC) in American Samoa is very pleased to be involved in the application submitted by the University of Hawaii Telecommunications and Information Policy Group (TIPG) to the Federal Communication Commission (FCC) in response to the FCC's announcement of a Pilot Program "For the Enhanced Access to Advanced Telecommunications and Information Services", WC Docket No. 02-60.

The American Samoa Medical Center is the only medical facility in American Samoa that provides service to nearly 70,000 people. We are a 108-bed facility that provides clinical, laboratory, pharmacy, dietetics, radiology, dialysis and mental health services. We are also the only health care facility in the Pacific Islands that has successfully implemented the Veterans Health Administration Information Systems and Technology Architecture (VistA) electronic health record system. The American Samoa Department of Public Health is also utilizing our VistA system.

American Samoa as a Pacific Island economy faces many challenges including geographic isolation, high cost of transportation, and high cost of telecommunications. To improve the quality of health care for the people of American Samoa, the ASMC seeks to participate in the Pacific Broadband Telehealth Demonstration Project of the Federal Communications Commission.

We hope to be able to participate in the available telehealth and telemedicine programs in the region through the STAN network and Internet2 connections. Continuing medical education programs delivered from the University of Hawaii and health care providers in Hawaii and other states will provide opportunities for our physicians and health care professionals to stay abreast of the latest clinical and research findings. The telehealth programs also will provide us access to specialists that are currently not available in American Samoa. We are interested in collaborating with providers in Hawaii and other locations to benefit from applications such as fetal teleultrasound, teleradiology, nephrology and other applications that require much higher bandwidth than the public Internet currently enables. The Hawaii Pacific Health System has committed a fetal ultrasound system providing that we are able to support a 768 Kbps link directly to their facility.





# LBJ Tropical Medical Center

P.O. Box LBJ  
Pago Pago, American Samoa 96799



The American Samoa Medical Center will contribute to the management structure of the network by participating in the Advisory Committees. We will also seek additional funding to meet the required 15% local match.

We are painfully aware that the Rural Health Care Program has benefited many healthcare providers in the states. However, in the Pacific Islands, we have yet to benefit from the program although the American Samoa telecommunication carriers contribute to the Universal Services Fund.

As you are aware, our Territory and the American Samoa Medical Center have struggled to raise this issue with the FCC. Initially the program definition and designation of urban and rural prohibited our participation in the program as our jurisdiction did not fit within these definitions. In recent years the FCC has designated our jurisdiction as completely rural and established a discount of 50% for advanced telecommunication services. Although this was progress, the high cost of telecommunications still prohibited us from sustaining the 50% matching funds. For example, an off-island T1 was recently bid by the Erate program of the American Samoa Department of Education and the lowest bid was over \$300,000 a year. Thus, even though we have desperate needs for connectivity, we have not been able to take advantage of the current rural health program.

The FCC Pilot Project provides us a very good opportunity to finally benefit from the RHCD program and participate in a regional network that interconnects many healthcare facilities. We request that any rules that might prevent us from connecting to Hawaii and the nearest site with Internet2 site and a medical school be suspended to help us and that the rules of Erate regarding transmission facilities be applied because we sorely need financial assistance with our network and video conferencing equipment.

We urgently need improved connectivity for health care in American Samoa and have witnessed the significant impact that the Erate program has had on network infrastructure and education in American Samoa. We anticipate that the results of the FCC pilot projects will encourage increased participation, access, affordable and unified regional telehealth networks.



**LBJ Tropical Medical Center**  
P.O. Box LBJ  
Pago Pago, American Samoa 96799



Finally, we would be remiss in saying that we really appreciate the decisions by the FCC Commissioners to provide special rules for the "all rural" "states." We are hopeful that the concept of "region" can address our needs and enable us to participate in the many telehealth programs available through the STAN and the FCC Pacific Broadband Telehealth Demonstration Project.

Sincerely,

**Charles Warren, Chairman**  
Board of Directors  
American Samoa Medical Center Authority

# UNIVERSITY OF HAWAII AT MĀNOA

John A. Burns School of Medicine

Department of Family Medicine and Community Health May 3, 2007

Federal Communication Commission  
9300 East Hampton Drive  
Capital Heights  
MD, 20743

Subject: WC Docket No. 02-60 – Pacific Broadband Telehealth Demonstration Project

Dear FCC Commissioners:

The University of Hawaii Department of Family Medicine and Community Health fully endorses the application submitted by the University of Hawaii Telecommunications and Information Policy Group (TIPG) on behalf of the Pacific Broadband Telehealth Demonstration Project Consortium. The proposal is submitted to the Federal Communication Commission (FCC) for the funding of a Pilot Program that would give health care providers an enhanced access to advanced telecommunications and information services.

The mission of the Department of Family Medicine and Community Health is to practice and teach high-quality medicine within the context of the basic principles of continuity of care, family oriented comprehensive and holistic care, community orientation, cost-effective service and highest quality of care possible. Over 60% of our graduates work in rural Hawaii or the Pacific Basin.

The FCC Pilot Project provides much needed opportunity for us to upgrade the telecommunication circuits from our Physician Center at Mililani, one of our primary residency teaching sites, to the University of Hawaii. Our current connectivity is used for video teleconferencing, Internet and electronic health records. When using concurrent applications the data throughput lag makes it difficult to use our electronic health records as it is operated through an Applications Service Provider (ASP). This occurs every Wednesday when our weekly Continuing Medical Education video teleconference sessions are scheduled. The network upgrade to increase connectivity will significantly improve the quality of our services and applications.

The Hilo Medical Center has been newly designated as our second primary residency teaching site. High resolution video and good connectivity to Hilo will be an important factor for supporting this site that is located on the neighbor island of Hawaii. Additionally, we have many collaborative partnerships with health care providers and facilities in the Pacific Islands. It is extremely difficult to conduct telehealth and Continuing Medical Education sessions to these locations because of the high cost of telecommunications. Improving our telecommunication infrastructure will allow us to more effectively address the disparate health and continuing educational needs in the U.S. Affiliated Pacific Island jurisdictions.

Coordinated efforts between the University, Department of Health in Hawaii and the Pacific Islands health systems are sorely needed. An integrated and seamless network will provide a



foundation to further our collaborative efforts. We fully endorse the proposal and look forward to the continuation of this program.

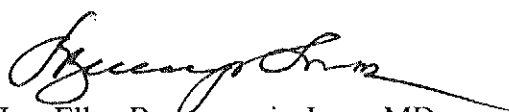
Sincerely,

A handwritten signature in black ink, appearing to read "Neal A. Palafox MD MPH".

Neal A. Palafox, MD, MPH

Professor and Chair

Principal Investigator, Pacific Association for Clinical Training / Pacific Comprehensive Cancer Control Program / Pacific Cancer Initiative

A handwritten signature in black ink, appearing to read "Lee Ellen Buenconsejo-Lum".

Lee Ellen Buenconsejo-Lum, MD

Assistant Professor

Project Director, Pacific Association for Clinical Training

Associate Residency Program Director

Co-Lead, VistA Office Electronic Health Record

**University of Hawai'i at Manoa**  
**Department of Psychology**  
2430 Campus Road  
Honolulu, HI 96822  
Phone: (808) 956-8108 Fax: (808) 956-4700  
sneil@hawaii.edu

May2, 2007

Federal Communication Commission  
9300 East Hampton Drive  
Capital Heights  
MD, 20743

To FCC Commissioners:

On behalf of the University of Hawaii Department of Psychology, I fully endorse the proposal submitted by the University of Hawaii Telecommunications and Information Policy Group in response to the Federal Communication Commission (FCC) Pilot Program "For the Enhanced Access to Advanced Telecommunications and Information Services", WC Docket No. 02-60.

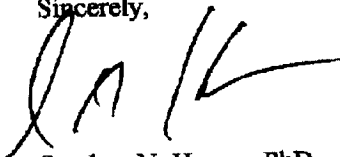
The University of Hawaii Department of Psychology works collaboratively with the State of Hawaii Child and Adolescent Mental Health Division and also with the U.S. Territories of Guam, American Samoa and the Commonwealth of the Northern Mariana Islands. Our program operates a clinical service, research, and training center for adults, adolescents, and children with emotional and behavioral disorders.

We have utilized video teleconference services for education and training from the university however the proposed network upgrades and build-out would expand our reach in the state and region tremendously. We are completely ready and willing to strengthen our existing partnerships as well as establish new collaborations that could be supported with an integrated state and regional telehealth network.

The University of Hawaii Department of Psychology will participate in the Telehealth Applications Advisory Committee to assist with the program development and network applications. We will also seek matching funds and resources to contribute toward the project.

The FCC Pilot Project is definitely needed to assist us in meeting our needs for increased outreach, improved quality of telehealth services in a time and cost effective means. We look forward to the continued support of the program.

Sincerely,



Stephen N. Haynes PhD  
Professor and Chair

May 3, 2007



Federal Communication Commission  
9300 East Hampton Drive  
Capital Heights  
MD, 20743

Subject: WC Docket No. 02-60 – Pacific Broadband Telehealth Demonstration Project

Dear FCC Commissioners:

The Shriners Hospital for Children, Honolulu (SHCH), fully endorses the application submitted by the University of Hawaii Telecommunications and Information Policy Group (TIPG) on behalf of the Pacific Broadband Telehealth Demonstration Project to the Federal Communication Commission (FCC) for enhanced access to advanced telecommunications and information services.

The Shriners Hospitals for Children's outreach team routinely conducts patient clinics on the outer islands within the State of Hawaii and the Western Pacific. Children are screened for eligibility of care, and its established patients receive follow-up evaluations and treatment. The Pacific Islands in general have a low per capita income, smaller populations, and are geographically isolated by vast distances. High travel and telecommunication costs are detrimental to the proper screening of candidates. Utilizing the equipment and services of TIPG/PEACESAT allows the Shriners physicians and medical geneticists the opportunity to interview the entire family of a patient which sometimes plays a vital role in diagnosis.

The Shriners Hospitals for Children, Honolulu could benefit from the upgraded broadband network as it would expand the Continuing Medical Education and outreach of the existing programs that are sometimes limited due to the network capacity. Also Shriners is very interested in the capabilities of high definition video as the current analog video is sometimes not adequate for the proper evaluation of gait movement and thus our telemedicine programs must selectively screen the appropriate cases that can be serviced through telemedicine. The cases that are not appropriate require that our health care professionals travel to the islands or for the patients to come to Honolulu. This is costly in funding and time. If the High Definition video is capable of increasing the resolution of the video image we may be able to further expand our telemedicine services.

For these reasons, SHCH strongly supports this initiative and look forward to partner with the PBTIP consortium for future medical education, telehealth and telemedicine activities.

Sincerely,

Ellen Raney, MD  
Chief of Staff

Miki Morris  
Acting Administrator

**U N I V E R S I T Y   O F   H A W A I I**

Information Technology Services  
Technology Infrastructure

May 4, 2007

Federal Communications Commission  
9300 East Hampton Drive  
Capital Heights, MD 20743

RE: Support for Pacific Broadband Telehealth Demonstration Project Proposal

The Telecommunications and Information Policy Group (TIPG) submitted a proposal entitled the Pacific Broadband Telehealth Demonstration Project in response to the Federal Communications Commission (FCC) Pilot Program "For the Enhanced Access to Advanced Telecommunications and Information Services", WC Docket No. 02-60.

TIPG has shared its plans to enhance connectivity to Hawaii's rural health community and to establish demonstration projects consistent with the intent and direction of the FCC's docket. My office stands ready to support the planned use of the existing interconnection between the University of Hawaii, and the State of Hawaii's Next Generation Network backbone in order to support connections with the State of Hawaii, Department of Health. As an Internet2 member institution, we also support the future extension of the demonstration project to leverage the University of Hawaii's existing high capacity connections to Internet2.

We are pleased to lend our support to the Pacific Broadband Telehealth Demonstration Project, and hope that the State's rural healthcare institutions will be able to benefit from the efforts of this collaborative project.

Sincerely,



Garret T. Yoshimi  
Director, Technology Infrastructure

c: Christina Higa, TIPG

# UNIVERSITY OF HAWAII AT MĀNOA

Department of Anthropology  
College of Social Sciences  
**Pacific Emergency Management  
Preparedness and Response Information  
Network and Training Services  
Pacific EMPRINTS**

May 2, 2007

Federal Communication Commission  
9300 East Hampton Drive  
Capital Heights, MD 20743

To FCC Commissioners:

The University of Hawaii's Pacific Emergency Management, Preparedness and Response Information Network and Training Services (Pacific EMPRINTS) is pleased to support the proposal submission by the University of Hawaii Telecommunications and Information Policy Group in response to the Federal Communication Commission (FCC) Pilot Program "For the Enhanced Access to Advanced Telecommunications and Information Services", WC Docket No. 02-60.

We are a consortium of more than ten organizations, including the UH School of Nursing, John A. Burns School of Medicine, Kapiolani Community College's Emergency Management Services and the Schools of Public Health at UCLA, UC-Berkeley, Loma Linda University and San Diego State University and the Yale School of Medicine.

We are extremely supportive of the Hawaii and Pacific region FCC Pilot Project as it would enable us to strengthen these existing partnerships. In addition, the robust network infrastructure is required to improve the quality of our training programs, which seek to train healthcare professionals in Hawaii, California, and the U.S. Affiliated Pacific Islands in disaster management. A major component of our trainings is distance learning, currently accomplished via online courses, problem-based learning cases, and podcasts. Enhanced connectivity and capacity will not only increase our ability to deliver quality distance learning opportunities to our core audience of healthcare providers, it will also augment the overall training experience, providing trainees with a uniquely effective distance learning opportunity.

The Pacific EMPRINTS program is fully committed to seeking funding to meet our 15% matching funds for the project. We will contribute resources, services and training over the network.

We therefore strongly endorse the Hawaii and Pacific region proposal.

If I can be of assistance in answering any questions or concerns, please do not hesitate to call me at 808-956-8454.

Sincerely,



Ann Sakaguchi, MPH, PhD  
Director, Pacific Emergency Management, Preparedness and Response Information Network and Training Services (Pacific EMPRINTS)

# UNIVERSITY OF HAWAII AT MĀNOA

College of Social Sciences, Social Science Research Institute  
Mental Health Services Research, Evaluation, and Training Program

May 2, 2007

Federal Communication Commission  
9300 East Hampton Drive  
Capital Heights, MD 20743

To FCC Commissioners:

On behalf of the University of Hawaii Mental Health Services Research, Evaluation, and Training Program, I fully endorse the proposal submitted by the University of Hawaii Telecommunications and Information Policy Group in response to the Federal Communication Commission (FCC) Pilot Program "For the Enhanced Access to Advanced Telecommunications and Information Services", WC Docket No. 02-60.

The Mental Health Services Research, Evaluation, and Training (MHSRET) Program is committed to improving the quality of life for persons with severe and persistent mental illness through evidence-based practices and mental health services research. The MHSRET Program is a collaborative project between the State of Hawaii Adult Mental Health Division (AMHD) and the University of Hawaii (UH), Social Science Research Institute. The MHSRET Program, under the direction of Dr. A. Michael Wylie, supports over 15 graduate assistants and employs over 47 full-time staff in three units: Services Research, Evaluation, and Training (SRET); Management Information Systems (MIS); and Science-to-Service implementation projects in psychosocial rehabilitation (PSR). It is one of 51 nationwide outreach partners in the National Institute of Mental Health's (NIMH) Constituency Outreach and Education Program. We share with NIMH the commitment of disseminating science-based information on mental health to a broad array of audiences, bridging the gap between research and practice, thus improving the health and quality of life of people with mental illness.

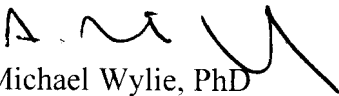
We are extremely supportive of the Hawaii and Pacific region FCC Pilot Project as it would enable us to strengthen our existing partnerships with the State of Hawaii Adult Mental Health Division and work with the community mental health clinics. The robust network infrastructure is required to improve the quality of our training programs that involve Avatar computer training. High definition resolution video teleconferencing is essential for effective computer training by distance learning. The network would be used for video teleconferencing consultations as well as for the collection of data. We currently pool State of Hawaii Department of Health Adult Mental Health Division data for evaluation and reporting purposes and to support our research in evidence based practices. We also anticipate the use of the network for statewide conferences where our constituency will be able to meet, share information and establish partnerships.

The University of Hawaii Mental Health Services Research, Evaluation, and Training Program is fully committed to seeking funding to meet our 15% matching funds of the project.

We will contribute resources, services and training over the network and will make our facilities available for multipurpose applications.

The State of Hawaii and Pacific region would be an ideal pilot project for the FCC as we have a critical mass of health care providers, research programs and educational institutions that are ready and willing to participate in collaborative programs. The State Telehealth Access Network that was established in 1999 has helped to support these initial activities and the proposed network expansion and broadband implementation will help us meet our current needs and provide potential for future expansion. For these reasons, we strongly endorse the Hawaii and Pacific region proposal.

Sincerely,

A handwritten signature in black ink, appearing to read 'A. Michael Wylie', with a stylized flourish at the end.

A. Michael Wylie, PhD  
Associate Professor and Director

# PSYCHIATRIC ACCESS COLLABORATION

1360 S. Beretania Street, 2<sup>nd</sup> Floor, Honolulu, HI 96818

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May 4, 2007

Federal Communication Commission  
9300 East Hampton Drive  
Capital Heights, MD, 20743

To FCC Commissioners:

On behalf of the Psychiatric Access Collaboration, I strongly support the proposal submitted by the University of Hawaii Telecommunications and Information Policy Group in response to the Federal Communication Commission (FCC) Pilot Program "For the Enhanced Access to Advanced Telecommunications and Information Services", WC Docket No. 02-60.

The Psychiatric Access Collaboration ("Collaboration") is a joint public/private partnership created to identify needed systemic changes and effective immediate-to long-term solutions for sustainable access to psychiatric services with an emphasis on the specific needs of the rural communities. Individuals representing the various stakeholder agencies meet via video teleconferencing allowing for equal input across the state.

Focused meetings are held via video teleconferencing for rural participation to explore the specific needs of rural communities for adult and child mental health services, rural hospitals with psychiatric services, and systemic challenges preventing access to psychiatric services.

The collaboration meets on a monthly basis with approximately 30-45 members attending from the various islands through video teleconference. It was a unanimous decision that we prioritize and support this effort as there are immediate needs for improved network connectivity and broadband connection to help us achieve our goals of furthering collaboration for delivery of services and continuing medical education within the State of Hawaii. We have been struggling to extend outreach and increase our telehealth capacity with limited resources. It is recognized the importance of this pilot to not only to assist our collaboration but also to unify the telehealth efforts within the state and region.



The project includes representation from educational institutions, health care providers and the State of Hawaii Department of Health. The development of the proposal in itself was a means to bring these parties together to share information, needs and solutions.

The Psychiatric Access Collaboration offers the highest level of support and commitment for this proposal. The FCC Pilot Project is definitely needed to assist us in meeting our needs for increased outreach, improved quality of telehealth services in a time and cost effective means. We look forward to the continued support of the program.

Sincerely,

A handwritten signature in cursive script, reading "Lydia Hemmings", followed by a small horizontal flourish.

Lydia Hemmings  
Executive Director

Hawaii Psychiatric Medical Association

## Appendix 4: Project Manager's Curriculum Vitae

# Curriculum Vitae

Name	Position Title
Norman H. Okamura, Ph.D.	<p>Faculty Specialist, Social Science Research Institute in Telecommunications and Information Technology Policy, Planning, Technology, Systems, Regulation, and Management</p> <p>Director, Graduate Certificate Program, Telecommunications and Information Resource Management (TIRM), School of Communication and Journalism</p>

## Education

Institution and Location	Degree	Year Conferred	Field of Study
University of Hawaii	Ph.D.	1982	Political Science
University of Hawaii (Honolulu)	M.A.	1975	Political Science
Loyola University of Los Angeles	B.A.	1974	Political Science & History

## Professional History

- 1992-Present Faculty Specialist (Associate Specialist – 1992-1999; Tenured – 1997; Promoted to Specialist - 1999) in Telecommunications and Information Technology Policy, Planning, Technology Systems and Management, Social Science Research Institute, University of Hawaii; Director, Graduate Program in Telecommunications and Information Resource Management.
- 1992-1992 Senior Manager, Information Technology, KPMG Peat Marwick, an international accounting, audit, management, and information technology consulting company.
- 1984-1992 Administrator, Information and Communication Services Division, State of Hawaii Department of Budget and Finance - Directed largest information technology and telecommunications organization in Hawaii with over 260 employees, a \$31 million budget, and review authority for all State, University, and Department of Education telecommunications and information technology projects.
- 1981-1984 Assistant Professor of Urban and Regional Planning, Department of Urban and Regional Planning, University of Hawaii specializing in planning methods, planning models (research methods, statistics, modeling), planning information systems, and environmental planning.
- 1978-1984 Research and Planning Projects Administrator, Department of Urban and Regional Planning, UH (managed \$2.4 million in external contracts and grants).
- 1975-1978 Educational Associate, Curriculum Research and Development Group, College of Education, University of Hawaii. Developed curriculum in coastal studies and taught two courses at the UH Laboratory School.
- 1975-1995 Lecturer, taught and co-taught 4 courses in Department of Political Science; 3 courses in Telecommunications and Information Resource Management Program of the Department of Communications.
- 1976 Computer programmer, Communication Institute, East-West Center.

## **Brief Summary of Relevant Experiences**

Dr. Okamura is currently a Faculty Specialist with the Social Science Research Institute (SSRI) focused on information and communication technology (ICT) policy, planning, and technology systems. Within the SSRI, he is the Director of the Telecommunications and Information Policy Group (TIPG), the Co-Principal Investigator (with Christina Higa) of the Pan-Pacific Education and Communication Experiments by Satellite (PEACESAT) at the SSRI, and the Director of the Telecommunications and Information Resource Management (TIRM) Graduate Certificate Program. Since his return to the University of Hawaii in 1992, Dr. Okamura has served as a Principal Investigator, Co-Principal Investigator, or project advisor on many research and service projects. Dr. Okamura teaches graduate courses in telecommunications.

Prior to his return to the University of Hawaii in 1992, Dr. Okamura served as the Senior Manager in the Information Technology Department of the Honolulu Office of KPMG Peat Marwick.

From 1984-1992, Dr. Okamura served as the career-service Administrator of the Hawaii Information and Communication Services Division (ICSD) in the State of Hawaii Department of Budget and Finance. In this capacity, he was directly responsible for central information and telecommunications systems development, management, operations, and major computer-based application information systems. Dr. Okamura led a team of over 260 full-time employees and directly managed an annual budget of over \$30 million dollars. Some of the special projects that Dr. Okamura directed include the HAWAII Wide Area Integrated Information Access Network (HAWAIIAN), the State public service telecommunications backbone consisting of a high-speed fiber optics network, an inter-island digital and analog microwave network, and packet networks; the Hawaii Interactive Television System (HITS); and, Hawaii For Your Information, a public information service.

From 1981 to 1984, Dr. Okamura served as an Assistant Professor and Research Administrator (1978-1984) of the Department of Urban and Regional Planning. As the Research Administrator, he conducted studies in coastal zone management, information systems, pedestrian safety, and driving under the influence of alcohol. Dr. Okamura taught graduate classes in planning and research methods and models, environmental planning, and land use information systems.

Dr. Okamura has served as an information technology consultant to public and private organizations, including the American Samoa Power Authority (ASPA); Hawaii Health Systems Corporation (HHSC), Hawaii Medical Services Association (HMSA); Inter-Island Systems Development and Integration, Inc.; MELE Associates; M.E. International; State of Hawaii Department of Health (DOH)/Mental Health Division, State of Hawaii Department of Planning and Economic Development, State of Hawaii Department of Budget and Finance.

## **Extramural Grants, Contracts, and Awards**

Principal Investigator, Hawaii OpenVista Application Service Network; funded by Centers for Medicare and Medicaid; 3/1/2007-12/31/2008, \$3,118,826.

Co-Principal Investigator under MELE Associates, Barriers and Facilitators to the Implementation of Electronic Health Records in Rural Communities, funded by the Medical Research and Materials Command, U.S. Department of Defense, 8/11/2006-03/31/2008, \$2,500,000.

Co-Principal Investigator with Christina Higa, PEACESAT, funded by the National Telecommunications and Information Administration, FY 2006-2007, \$499,440.

Principal Investigator, VistA Institute (Design and Development Support), funded by Mele Associates, Inc. and the Pacific Telehealth and Technology Hui, 5/1/2005-12/31/2005, \$352,826.60.

Co-Principal Investigator with Christina Higa, PEACESAT, funded by the National Telecommunications and Information Administration, FY 2005-2006, \$499,415.

Recipient, travel grant from United Nations University to serve as panelist at the Ubiquitous Network Society. Tokyo, Japan; May 2005; \$2,500.

Co-Principal Investigator with Dr. Neal Palafox (J.A. Burns School of Medicine), Pacific Association for Clinical Training (PACT) Project, Health Resources and Services Administration (HRSA), FY 2003-2006, \$1,549,412.

Co-Principal Investigator with Christina Higa, PEACESAT, funded by the National Telecommunications and Information Administration, FY 2004-2005, \$492,000.

Recipient, travel grant from Korea e-Health Association to serve as panelist on APEC e-Health. Seoul, Korea; December 2004; \$2,500.

Principal Investigator with Christina Higa, Pacific Island Digital Opportunities (PIDO) Research Project, funded by the Sasakawa Peace Foundation, FY 2003-2004, \$25,000.

Principal Investigator, Telecommunications Research and Services Project/State Telehealth Access Network/PEACESAT Pacific Partners Network, Multiple Funding Agencies, FY 1994-2003, \$5,287,636.

Co-Principal Investigator with Christina Higa, PEACESAT, funded by the National Telecommunications and Information Administration, FY 2003-2004, \$484,977.

Recipient, travel grant from the Communications Research Laboratory (CRL), Japan for Satellite Communications Workshop. February-March 2003, \$1,826.42.

Recipient, travel grant from American Samoa Power Authority for DELTA Meeting. January-February 2002, \$2,707.

Co-Principal Investigator with Christina Higa, PEACESAT Operations, Maintenance and Improvement Program Training in the Pacific Islands region, funded by the American Samoa Power Authority and the U.S. Department of Interior, Federal Fiscal Year ("FY") 2002-2003, \$155,509.

Co-Principal Investigator with Christina Higa, PEACESAT, funded by the National Telecommunications and Information Administration, FY 2002-2003, \$475,000.

Recipient, travel grant from Japan Pacific Economic Cooperation Council (PECC) to attend and give Keynote speech to PECC Pacific Islands Nations Task Force meeting on the Digital Divide in the Pacific Islands Region, Hong Kong and Japan, FY 2001-2002.

Principal Investigator, Internet connectivity for the Ministry of Health and Environment and the National Library, funded by the National Library of Medicine FY 2001-2003, \$48,930 (Matching amount provided by the RMI Ministry of Health and Environment).

Recipient, travel grant from Japan Ministry of Public Management, Home Affairs, and Posts and Telecommunication to give panel presentation on PEACESAT, Japan, FY 2002-2003.

Recipient, travel grant from Sasakawa Pacific Islands Nations Fund to participate in the Pacific Islands Digital Opportunities (PIDO) Meeting in Japan, FY 2002-2003.

Co-Principal investigator with Christina Higa, PEACESAT, funded by the National Telecommunications and Information Administration, FY 2001-2002, \$450,000.

Co-Principal investigator with Christina Higa, PEACESAT, funded by the National Telecommunications and Information Administration, FY 2000-2001, \$449,865.

Principal Investigator, PEACESAT Policy Conference, funded by the Sasakawa Peace Foundation, FY 2000-2001, \$45,000.

Co-Principal Investigator, Pacific Telecommunications Policy Conference, funded by the Sasakawa Peace Foundation, FY 2000-2001, \$9,975.

Principal Investigator, Telehealth and Telemedicine Workshop for the Pacific, funded by the Health Resource Services Administration, FY 2000, \$50,000.

Co-Principal investigator with Christina Higa, PEACESAT, funded by the National Telecommunications and Information Administration, FY 1999-2000, \$445,745.

Principal Investigator, Planning Grant for American Samoa, Guam, and the Commonwealth of the Northern Mariana Islands, funded by the National Telecommunications and Information Administration, FY 1997-1998, \$130,117.

Principal Investigator, Pacific Islands Education and Training, funded by the Sasakawa Peace Foundation, FY 1998-1999, \$60,000.

Principal Investigator, PEACESAT, funded by the Department of Commerce-EDA/Planning Grant for American Samoa, FY 1998-1999, \$20,000.

Principal Investigator, PEACESAT, Cooperative Agreement 2, and Amendment 4, funded by the National Telecommunications and Information Administration, FY 1997, \$119,000.

Principal Investigator, Public Service Telecommunications in Hawaii and the Pacific Regions, funded by the Maui Economic Development Board, FY 1996-1999, \$435,000.

Recipient, travel grant from College of Business Administration to attend and give presentation to Asia-Pacific Economic Cooperation (APEC) Business Conference on Hawaii Technology Development economic development strategies, Vancouver, Canada, FY 1996/97.

Principal Investigator, Radomes and Training for Emergency Management Network, State Fiscal Year (FY) 95-1996, \$118,000.

Principal Investigator, Emergency Management Network, funded by the Pacific Basin Development Council and the U.S. Department of Interior, and Federal Emergency Management Agency, FY 1995-1997, \$761,970.

Principal Investigator, Distance Education Learning Technologies and Applications, funded by National Telecommunications and Information Administration, FY 1994-1997, \$968,000.

Co-Investigator, PEACESAT, Cooperative Agreement 2, and Amendments 1, 2, 3, funded by the National Telecommunications and Information Administration, FY 1994-1996, \$1.7 million.

Recipient, travel grant by the Japan Ministry of Posts and Telecommunications to attend and make presentation to the APT High-Level Meeting on the Asia-Pacific Information Infrastructure, FY 1995-1996.

Recipient, travel grant to attend and participate in panel at TECHEXPO Conference for Government and Education, Los Angeles, FY 1995-1996.

Recipient, travel grant to participate in the American National Red Cross Disaster Communications Task Force Meeting, Virginia, USA, FY 1995-96.

Principal Investigator, Asia-Pacific Telecommunications Infrastructure Study, funded by the Hawaii Information Network Corporation, FY 1994-1996, \$30,000.

Recipient, travel grant from South Pacific Forum to attend and give presentation to Conference of Ministry, Users and Providers, Forum Secretariat, Suva, Fiji, FY 1994-1995.

Recipient, travel grant from UNESCO to attend and give presentation on Distance Learning in the Pacific Islands Region, Suva, Fiji, December 1994.

Recipient, travel grant from Sea Grant College Program to provide Briefing of Guam, CNMI, and FSM-Pohnpei on the PEACESAT Services Improvement Plan, FY 1994-1995.

Recipient, travel grant to attend and participate in ETS-V PARTNERS Satellite Workshop Conference, National Institute for Multimedia Education, Chiba, Japan, January 1994.

Recipient, travel grant to attend and participate in PARTNERS/PEACESAT Conference, University of Electro-Communications (Tokyo) and Tohoku University (Sendai), Japan, March 1993.

Projects Administrator, Co-Investigator, and Principal Investigator of Coastal Zone Management Project with Professors Tom Dinell and Kem Lowry. FY 1978-1984, \$2.4 million.

Principal Investigator, Gift from Wang Laboratories Incorporated to the University of Hawaii College of Arts and Sciences, FY 1982-1983, \$340,000.

Principal Investigator, Capital Improvement Program Information System (CIPIS), funded by the Department of Planning and Economic Development, FY 1982-1983, \$25,000.

Principal Investigator, Driving Under the Influence of Alcohol. Federal Highways Administration and State of Hawaii Department of Transportation, FY 1981-1983, \$45,000.

Principal Investigator, Environmental Impact Statement Information System, Office of Environmental Quality Control, FY 1981-1982, \$25,000.

Project Administrator and Associate Investigator, Pedestrian Safety Project and Associate Investigator (John Holmstrom, PI), Data Analysis and Retrieval Technique (DART), State of Hawaii Motor Vehicle Safety Office, FY 1980-1982, \$15,000.

### **Selected Articles, Reports and Conference Presentations**

"Healthcare Informatics and the Challenges of Regional Health Information Organizations," Including the Community in Quality Conference Organized by the Hawai'i State Department of Health, Wailea, Maui, Hawai'i, October 25-27, 2006.

"Digital Challenges in the Pacific Islands Region," Ubiquitous Network Conference, Tokyo Japan. May 19, 2005.

Presenter, World Vista Conference. April 8, 2005.

"The ABCs of Telehealth," Telehealth-Telecommunications Seminar, Community Health Centers Telehealth Seminar. April 8, 2003.

Workshop Chair, "Basic Overview of Information Technology and Networking, Conference Title: The Shifting Role of the Chief Financial Officer, Sheraton Moana Hotel, June 20, 2002.

Panel "PEACESAT," 3<sup>rd</sup> International Forum on Advanced Satellite Communications in the Asia-Pacific Region, Japan, February 19, 2002.

Keynote: "The Digital Divide in the Pacific Islands region," Pacific Economic Cooperation Council Pacific Islands Nations Task Force, Hong Kong, December 26, 2001.

"The Digital Divide in the Pacific Islands Region," Japan PECC Workshop, Tokyo, Japan, November 21, 2001.

"Telehealth Networks and Applications in the Pacific Islands Region," Conference on Telerehabilitation Applications," sponsored by National Institute on Disability and Rehabilitation Research (NIDRR), Washington D.C., October 12-13, 2001.

"The American Samoa Erate Network: Connecting Schools and Classrooms," Pacific Education Conference," Commonwealth of the Northern Marianas Islands, July 2000.

"PEACESAT: Lessons for Regional and International Programs," Emerging Global Electronic Distance Learning Conference (EGEDL '99): The Challenge of Education, Tampere August 9-13, 1999.

"PEACESAT and Interconnections to Telehealth and Telemedicine Networks," Annual Meeting of the Pacific Island Health Officers Association, Kuilima, Hawaii, February 11, 1999.

"PEACESAT and Interconnections to Telehealth and Telemedicine Networks," Annual Meeting of the Pacific Island Health Officers Association, Kuilima, Hawaii, February 11, 1999.

Norman Okamura, Christina Higa. Workshop on Public Service Telecommunications in the Pacific Islands Region, Suva Fiji, October 23, 1998.

Co-Organizer, w/Christina Higa, Workshop on Public Service Telecommunications in the Pacific Islands Region, Suva Fiji, October 23, 1998.

Co-Chair, Institute for Telehealth and Telemedicine, sponsored by High Technology Development Corporation; Department of Business, Economic Development and Tourism; Social Science Research Institute. September 24-27, 1997.

Norman Okamura, Christina Higa. Institute for Telehealth and Telemedicine, sponsored by High Technology Development Corporation; Department of Business, Economic Development and Tourism; Social Science Research Institute. September 24-27, 1997.

Norman Okamura, Christina Higa. "Chapter 9: The Telecommunications and Information Infrastructure in the Pacific Islands Region: Implications for Distance Learning," in Toshio Kosuge and John Chick (eds). *Distance Learning in the Pacific Islands Region* (University of the South Pacific), 22 pgs, 1997.

Norman Okamura, Edmond Durand. "The Telecommunications and Information Infrastructure in the Pacific Islands Region: Leap Frog or Widening Gap?" *Proceedings of the Pacific Telecommunications Conference '96*, January 1996.

Norman Okamura, Christina Higa. "The Emergency Management Network of PEACESAT," Association of Pacific Islands Legislatures, November 20, 1995.

"The Emergency Management Network of PEACESAT," Association of Pacific Islands Legislatures, November 20, 1995.

Norman Okamura. "Venues for International Cooperation in the Pacific Islands Region," Pacific Islands Study Group, Ministry of Posts and Telecommunications, October 18, 1995.

"Venues for International Cooperation in the Pacific Islands Region," Pacific Islands Study Group, Ministry of Posts and Telecommunications, Japan, October 18, 1995



Norman Okamura, Eric Aubel, Christina Higa. *SPOT and PEACESAT Interference Problem: Report and Plan of Action*, October 24, 1995.

"PEACESAT: An Information Infrastructure for the Pacific Islands Region," Asia-Pacific Telecommunity, Japan, October 19, 1995. (Slide Presentation)

"The Emergency Management Network and PEACESAT," American National Red Cross Disaster Communications Task Force, Virginia, U.S., September 24, 1995.

Panel presentation on "Best Practices: Distance Education and Telemedicine in Pacific Islands Region," TECHEXPO Conference for Government and Education, Los Angeles, California, U.S., September 29, 1995.

Norman Okamura, Lori Mukaida. "Public Service Telecommunications: PEACESAT," *Pacific Telecommunications Review*, September 1995, pp. 14-23.

Norman Okamura, Al Blake, Reuben Lam, and Lori Mukaida. "Internet Access via PEACESAT." *Proceedings of INET'95*, June 1995, pp. 811-821.

Norman Okamura. *A Primer on the Pacific Telecommunications and Information Infrastructure*, Report to the Hawaii Information Network Corporation, April 1995.

"PEACESAT Services Improvement Plan." Conference of Ministry, Users and Providers, Forum Secretariat, Suva, Fiji, March 1995.

"PEACESAT Services Improvement Plan." UNESCO Pacific Regional Consultation on Developing Communication Technologies, Suva, Fiji, January 28-30, 1995.

"Public Service Telecommunications: HAWAIIAN and PEACESAT Networks," Building Global Connections, International Association of Aquatic and Marine Science Libraries and Information Centers (IAMSLIC), Hawaiian Regent Hotel, October 9-13, 1994, Honolulu, Hawaii.

Panel Presentation on "PEACESAT." Maui Pacific Center, Conference on Sustainable Living in the Aquatic Continent: Creating Sustainable Jobs, Maui, Hawaii, August 15 - 19, 1994.

Organized, chaired, and presented a session entitled "PEACESAT," Building Electronic Communities: Part II, Hawaii Information Network and Technology Symposium, Sheraton-Waikiki Hotel, March 23 - 24, 1994, Honolulu, Hawaii.

Organized, chaired and presented during session entitled "Public Service Telecommunication and Information Networks in Asia and the Pacific," Building Electronic Communities: Part II, Hawaii Information Network and Technology Symposium, Sheraton-Waikiki Hotel, March 23 - 24, 1994, Honolulu, Hawaii.

Norman Okamura, Christina Higa. "The Emergence of Pacific Partnerships for Distance Learning, Telehealth, and Telecommunications in the Pacific Islands Region: An Environmental Scan," *Proceedings of the Pacific Telecommunications Conference '94*, January 22-22, 1994, pp. 606-614.

Norman Okamura, Lori Mukaida. "PEACESAT: A Regional Telecommunications Alliance in Transition," *Proceedings of the Pacific Telecommunications Conference '94*, January 22-22, 1994, pp. 606-614.

"Comments on the Development of Telecommunications in Hawaii." Futures Forum on Telecommunications for the Hawaii State Senate, January 1994.

Norman Okamura, Lori Mukaida. "GOES-3 Services Improvement Plan," PEACESAT Working Paper, November 1993.

"Government Corruption" in Randall Roth (ed). *The Price of Paradise: Volume II*, Mutual Publishing, 1993, pp. 195-201.

Norman Okamura, Randall Roth. "Checks and Balances," in Randall Roth (ed). *The Price of Paradise: Volume II*, Mutual Publishing, 1993, pp. 167-170.

"Consumer and Public Policy Issues Related to the Future Development of the Hawaii FYI: Revisiting Act 1, SpSLH 1988: Relating To Telecommunications and Information." Hawaii Information Network and Technology Symposium. (May 15-16, 1992).

"The Need to Redefine the Information Technology Architecture in an Enterprise Computing Environment" and "Developing a Public Policy for Telecommunications." Presented seminar presentations for Provincial (State) Governments of British Columbia, Edmonton, Manitoba, and Regina (March 21-23, 1992).

"Strategic Telecommunications Planning: A Case Study of Hawaii." Presentation to the National Governor's Association, Center for Policy Research, Information Management Program, Conference on "Making Information Work." (January 18-23, 1992).

"Distributed Information Processing and Information Resource Management." Presentation to the Conference of National Association of State Information System Executives entitled "Bridging the Gap: From IRM Planning and Execution in the 90s" (August 5-8, 1991).

"The State of Hawaii Public Technology Program." Presented at the Public Technology Conference sponsored by the Alliance for Public Technology (March 22-24, 1991).

"State and Local Government Telecommunications Directions." Presentation to Senior Executives of Northern Telecom Incorporated (NTI) (November 26, 1990).

"State of Hawaii Strategic Program Initiative for Telecommunications and Computers." Presentation to the Annual Conference of the National Association of State Telecommunications Directors (NASTD) (September 14-17, 1990).

Norman Okamura. *Analysis and Recommendations for a State Voice Telecommunications System: A Report to the Director of Finance*. State of Hawaii Information and Communication Services Division, Department of Budget and Finance, May 1, 1989, 43.

Norman Okamura, Richard Kasperski, Dave DeWitt. Master Plan for Distributed Information and Information Resource Management. State of Hawaii, Department of Budget and Finance, February 1988, 111 pgs.

"Trends in Public Sector Information Systems Planning and Management in the United States." Presentation made to Economic Development Commission, Planning Commission, Government Computing Center, and Petroleum Ministry of the Peoples Republic of China and to the Shanghai Municipal Government (October 14-28, 1985).

Norman Okamura, Kem Lowry (1983). The evolution of a federal role: the coastal zone management act of 1972. *Publius*.

Norman Okamura, Kem Lowry (1980) Evaluation and intergovernmental relations in CZM. *Coastal Zone 80*, 429-443.

Norman Okamura. "Hawaii Permit Application and Support System." Permit Information Systems, Coastal States Organization, Washington, D.C., 1980.

Norman Okamura, Dave Raney. (1979) General Design for a Hawaii Permit Application and Support System. Report to the Department of Planning and Economic Development and the U.S. Office of Coastal Zone Management, 50.

"Some Notes Toward a Coordinated Approvals Process in Hawaii," *Red Tape vs. Green Light*, Department of Planning and Economic Development.

**Note: The above formats vary because information was taken from different sources.**

## **Affiliations**

- 2003- Present. Secretary-Treasurer and Member, Board of Directors, American Samoa Power Authority.
- 2001- Present. Member, Pacific Islands Digital Opportunities (PIDO) Committee of the Sasakawa Pacific Islands Nations Fund.
- 2000-2005. Member, Board of Directors of the Hawaii Health Systems Corporation. Member of the HHSC Committee on Finance, Audit, and Information Technology Committee.
- 1996-1997. Member, Governor's Task Force on Science and Technology, State of Hawaii.
- 1988-1990. Member, Board of Directors of the Government Technology Conference (GTC). The GTC is the largest government information and telecommunication technology conference in the United States.
- 1985-1991. Member, National Association of State Information Resource Executives (NASIRE). Elected to the Board of Directors from 1988-1990.
- 1987-1991. Member, National Association of State Telecommunications Directors (NASTD). Elected to the Strategic Planning Committee of NASTD from 1990-1991.
- 1986-1990. Member of the Honolulu Intergovernmental Information Processing Council (HIIPC) and also as its Vice President in 1989-1990.
- 1987-1990. Member, Board of Directors of the Criminal Justice Inter-agency Data Board. Elected Chairperson of the Board in 1989.

## **Awards**

- |      |  |
|------|--|
| 1989 | Manager of the Year, State of Hawaii Department of Budget and Finance          |
| 1990 | Program Manager of the Year, State of Hawaii Vocational Rehabilitation Program |
| 2000 | High Technology Company/Health and Medical, Technology Trade Association       |
| 2005 | Telecommunications Outstanding Industry Achiever                               |

# Curriculum Vitae

<b>Name</b> CHRISTINA HIGA	<b>Position Title</b> Director, Pan-Pacific Education and Communication Experiments by Satellite (PEACESAT) And Associate Director, Telecommunications and Information Policy Group, Social Science Research Institute, University of Hawaii
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## Education

Institution and Location	Degree	Year Conferred	Field of Study
University of Hawaii	B.A.	1991	Communications
University of Hawaii	Graduate Certificate	1992	Telecommunications and Information Resource Management
University of Hawaii	M.A.	2002	Communications

## Professional Experience

1996 – Present     Director, Pan-Pacific Education and Communication Experiments by Satellite Program, Social Science Research Institute, University of Hawaii

Ms. Higa is the Director of the PEACESAT program and the Associate Director of the Telecommunications and Information Policy Group. In her capacity as Director of PEACESAT, Ms. Higa manages a distance learning, telehealth, telemedicine, and public service telecommunications network in the Pacific Islands Region. These networks support narrowband voice, data, and video teleconferencing capabilities over a dedicated satellite and other fiber optic, microwave, and copper land-line telecommunications links. The program supports educational institutions, health care providers, government agencies, and other non-profit programs. In her capacity as the Associate Director of TIPG, Ms. Higa also directs a consortium that interconnects over 40 health care providers and academic institutions to the State of Hawaii Telehealth Access Network for clinical telehealth, clinical informatics, and distance learning applications. The networks managed under TIPG are interconnected and can be bridged to other networks through ISDN or IP.

Ms. Higa manages a group of professional staff and student assistants and is directly involved in the policy, technical, and management aspects of both PEACESAT and STAN networks and programs.

2005 – Present     Co-Instructor – Telecommunications and Information Resource Management Graduate Certificate Program, University of Hawaii

Ms. Higa co-teaches the COM 680: "Telecommunications Information Resource Management Seminar" course and the COM 682: "Telecommunications and Information Services" course at the University of Hawaii at Manoa.

2003 – 2006     Lecturer – Kapiolani Community College, University of Hawaii

Ms. Higa taught the COM 201: "An Introduction to Communications" course at the Kapiolani Community College. This course presents an overview of communication

focusing on the processes of interpersonal, intercultural, organizational, and international communication and on recent developments in multimedia, mass media, and telecommunications

April 2002 – November 2002      Visiting Associate Researcher, National Institute of Multimedia Education (NIME), Japan

As a Visiting Associate Researcher of NIME, Ms. Higa worked in collaboration with Dr. Kimio Kondo, NIME Executive Director of Research and Development, on the SCS and PEACESAT Integration Project. This research project involved establishing a technical interconnection between the two satellite projects, identifying program areas between Japan and the Pacific Islands and developing a pilot international exchange project between educational institutions representing Japan, a Pacific Island and Hawaii. The fellowship has resulted in numerous projects utilizing the satellite network connections and the development of new institutional relationships.

1991-1996      PEACESAT

Prior to becoming the Director of PEACESAT in 1996, Ms. Higa served as the Systems and Operations Manager from 1995 to 1996, the Project Manager of DIGITAL PEACESAT (1993-1996), the Project Manager for the Emergency Management Network (1995-1996), and the Administrative Officer from 1991-1993.

### **Selected Papers, Articles, and Reports**

Forthcoming "Pacific Association for Clinical Training: e-Learning Telecommunication Infrastructure Assessment in the U.S. Affiliated Pacific Islands" Pacific Health Dialog. Suva, Fiji

Forthcoming "Pacific Islands experiences and Future in Telehealth Human Resource Development" Journal of eHealth Technology and Application.

2006 "Chapter 6: Crouching Technology, Open Heart." Elizabeth Kunimoto (editor). Learning in the Light: Multicultural Communication and Asian Women in Communication. Patina Productions, LLL. Kailua, Hawaii.

2004 January "From Samoa TV to StAmP Net: Bridging Pacific Partners through Distance Learning." Proceedings of the Pacific Telecommunications Conference 2004. Honolulu, Hawaii

2002 November "The SCS/PEACESAT Integration Project: Bridging Satellite Networks and Evaluating Shared Program Areas between Japan and the Pacific Islands." NIME. Chiba, Japan.

2002 September w/Kimio Kondo. "The Integration of Satellite Networks: Space Collaboration System (SCS) and PEACESAT." Institute of Electronics, Information and Communication Engineers. ET2002-32~43.

2002, January "PEACESAT Celebrates 30 Years in the Pacific Islands: A Program Update and Look at Public Service Telecommunications in the Region." Proceedings of the Pacific Telecommunications Conference 2002. Honolulu, Hawaii.

2001, February "HRSA and DBEDT Sponsor: A Pacific Basin Telehealth Workshop" *Pacific Newsbytes*, Hawaii's Web and Internet News. February 2001.

2001, March "New Video Teleconferencing Services" *Pacific Newsbytes*, Hawaii's Web and Internet News. March, 2001.

2000, August "Japan's SPINF, PECC and The Pacific Society sponsor the 4th Coconuts College Open Seminar in Yaeyama Islands." *Pacific Newsbytes*, Hawaii's Web and Internet News.

2000, August "All lights green -- PEACESAT Thanks NOAA For GOES-7 Satellite" *Pacific Newsbytes*, Hawaii's Web and Internet News..

2000. w/ Norman Okamura. "Chapter 5: Distance Education Learning Technologies and Applications in a Pacific Islands Environment: A Focus on Interactive Technologies." Toshio Kosuge and John Chick (eds). Distance Learning in the Pacific Islands Region . University of the South Pacific. pp 183-212.

2000, January. w/ Norman H. Okamura. "The Emergence of Pacific Partnerships for Distance Learning, Telehealth, and Telecommunications in the Pacific Islands Region: An Environmental Scan," Proceedings of the Pacific Telecommunications Conference 2000, pp. 606-614.

1999, March. w/ Stephen Harkness. "Distance Learning: Making it Work!" *Pacific Newsbytes*, Hawaii's Web and Internet News.

1999, March. w/ Norman Okamura. "Distance Education and Learning in the Pacific Islands Region." *Pacific Newsbytes*, Hawaii's Web and Internet News.

1999, January. w/ Norman Okamura. "Telehealth and Telemedicine in the Pacific Island Region: An Environmental Scan." *Pacific Newsbytes*, Hawaii's Web and Internet News. February 1999.

"Noumea Hosts a Pacific Telehealth Conference." *Pacific Newsbytes*, Hawaii's Web and Internet News.

1999, January. "The PEACESAT Program." *Pacific Newsbytes*, Hawaii's Web and Internet News.

1998, December. "Telecom Excitement in Fiji." *Pacific Newsbytes*, Hawaii's Web and Internet News.

1998, December. w/ Norman Okamura. "Telecommunications Developments in the Pacific Island Region: An Environmental Scan." *Pacific Newsbytes*, Hawaii's Web and Internet News.

1996, January. w/ David Kennard, Marilyn Shigetani and Jerry Norris. "Strategies for Working in Collaboration to Support Emergency Management Communications in the North, Central and Western Pacific" Proceedings of the Pacific Telecommunications Conference 1996,

1995, October. w/ Eric Aubel, Norman Okamura. SPOT and PEACESAT Interference Problem: Report and Plan of Action.

1995, September. "The New Tools of Learning: Cyberspace and Telecommunication Systems, Mastering Technology and Maximizing on Human Resources at the University." Telecommunication Summit: The International Student Seminar on Human Rights. Bandung, Indonesia.

1995, November. "The Emergency Management Network of PEACESAT," Association of Pacific Islands Legislatures.

1994, February. w/ Thomas Okamura. "Preliminary Assessment of Elementary School Cultural Exchange Using 64 Kbps Video Teleconferencing."

## **Selected Conference, Seminar, and Other Presentations**

2004, March	SPREP/ United Nations University: Interlinkages – Capacity Building for Multilateral Environmental Agreements: PEACESAT Interlinkages, Suva, Fiji
2003, April	American Institute for Aeronautics and Astronautics 21 <sup>st</sup> International Communications Satellite System Conference: Panel Co-Chair, Tele-Education, Telemedicine and Integrated Applications, Yokohama/ Japan
2003, January	United Nations World Summit on Information Society, NGO Statement by PEACESAT for Pacific Island Recognition in the WSIS Process, Tokyo/ Japan
2002, November	4 <sup>th</sup> International Forum on Advanced Satellite Communications in the Asia-Pacific Region: Application Development using Satellite Communication Technology, Tokyo/Japan
2002, September	Institute of Electronics, Information and Communication Engineers Conference, Hiroshima Japan/ The Integration of Satellite Networks: Space Collaboration System (SCS) and PEACESAT – Focus on Applications
2002, September	Institute of Electronics, Information and Communication Engineers Conference, Miyazaki Japan/ The Integration of Satellite Networks: Space Collaboration System (SCS) and PEACESAT – Focus on Networking
2002, August	Pacific Island Digital Opportunity, Honolulu, USA/ Update on the PEACESAT Program.
2002, June	Coconuts College: 5th Coconuts College Open Seminar /A Voyage of Exploration: Our Common Seafaring Heritage, Kuroshima, Okinawa
2002, January	Pacific Telecommunication Conference, Honolulu USA/ PEACESAT Celebrates 30 Years in the Pacific Islands: A Program Update and Look at Public Service Telecommunications in the Region
2001, January	Pacific Telecommunication Conference, Honolulu USA/ Session Chairperson, Panel on Distance Learning and Education
2001, November	JUSTSAP, Kona, Hawaii, USA/Public Service Telecommunications in the Pacific Islands
2001, July	Pacific Education Consortium Conference, Guam, USA/ A Video Teleconference Demonstration for Distance Learning
2000, June	Coconuts College: Beyond the Sea – History and Future of Islander, Yaeyama Islands, Okinawa – Japan/ “Digital Divide in the Pacific Islands: Telecommunication & Globalization”
2000, January	Pan Pacific Distance Learning Association, Honolulu USA/ “Update on E-Rate Activities in the Pacific Islands” “An Environmental Scan on Telehealth and Telemedicine Activities in Hawaii and the Pacific Islands”

- 2000, January Pacific Telecommunication Conference, Honolulu USA/ "The Emergence of Pacific Partnerships for Distance Learning, Telehealth, and Telecommunications in the Pacific Islands Region: An Environmental Scan," (Written in collaboration Dr. Norman H. Okamura.)
- 1999, September Pacific Island Health Officer's Association Meeting, Pohnpei, FSM/"Update on PEACESAT & FCC Further Notice of Proposed Rulemaking."
- 1999, August Partners in Economic Development, Honolulu USA/ "Panel Presentation & Discussion: "Telecommunications and Economic Development Partners in Economic Development. Honolulu USA/"
- 1999, July Workshop on Public Service Telecommunication Networks in the Pacific Islands, Saipan CNMI/Co-Organized w/ Dr. Norman H. Okamura and sponsored in part by the Sasakawa Pacific Islands Nations Fund
- 1998, October Workshop on Public Service Telecommunications in the Pacific Islands Region, Suva Fiji/ co-organized w/ Dr. Norman H. Okamura and sponsored in part by the Sasakawa Pacific Islands Nations Fund
- 1998, April "Pacific Resources for Education and Learning – Voyaging with a Vision. Kauai USA/ Multicultural Interchange Comes Alive through Video Conferencing"
- 1996, January Pacific Telecommunication Conference, Honolulu USA/"Strategies for Working in Collaboration to Support Emergency Management Communications in the North, Central and Western Pacific" (Written in collaboration with representatives from FEMA, American Red Cross and the Pacific Basin Development Council.)
- 1995, September Telecommunication Summit: The International Student Seminar on Human Resources, Bandung, Indonesia/ "The New Tools of Learning: Cyberspace and Telecommunication Systems, Mastering Technology and Maximizing on Human Resources at the University"
- 1994, March HINTS-6, Hawaii Information Network and Technology Symposium, Honolulu USA/PEACESAT Services
- 1993, March The 2nd Joint Meeting on Development of a Global Distance Education System for the Pacific Region, Tokyo Japan/PEACESAT Operations
- 1992, February PEACESAT Policy Conference, Sendai Japan/ETS-V/ PEACESAT Experiments

### **Travel**

Ms. Higa has traveled throughout the United States and has conducted research and/or business meetings/presentations in American Samoa, Australia, Commonwealth of the Northern Marianas Islands, Cook Islands, Federated States of Micronesia (Chuuk, Kosrae, Pohnpei, Yap), Guam, Indonesia, Japan, Korea, Okinawa, New Zealand, the Republic of Palau, the Republic of the Marshall Islands, and Samoa (formerly Western Samoa).



**Affiliations**

2005 to Present	Director, Regional Telehealth Resource Center
1997 to Present Magazine	Director, Editorial Board, Hawaii's Web and Internet News
1999 to Present	Director, Pan Pacific Distance Learning Association
1999 to 2000	President and President-Elect, Pan Pacific Distance Learning Association
1999 to Present	PTC Member (PEACESAT Organization Affiliation)

**Honors**

2003	Research Corporation of the University of Hawaii, Employee of the Year
1991	University of Hawaii Mortar Board National Honor Society
1990	Recipient of the Harry & Rosina Krowick Scholarship
1989	Golden Key National Honor Society